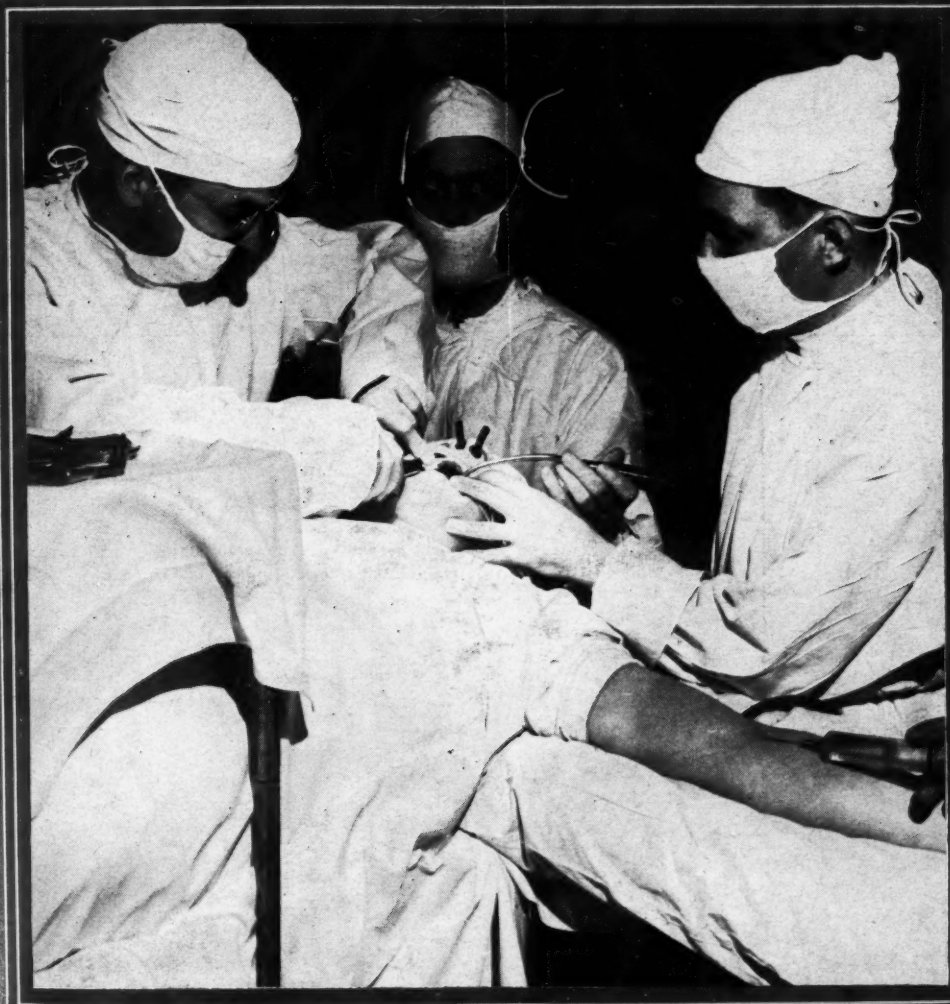
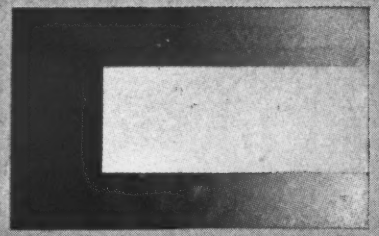
DENTAL Digest



AUGUST 1945

USE THE YELLOW
TO SEE THE RED



USE THE RED
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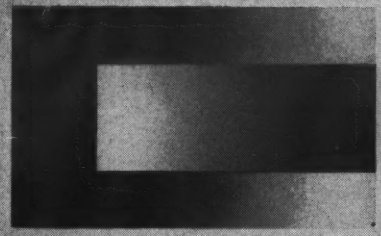
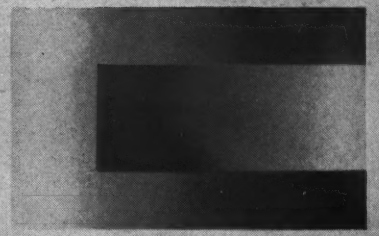


USE THE LIGHT
TO SEE THE DARK



USE THE DARK
TO SEE THE LIGHT

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THE DENTAL Digest

VOL. 51 NO. 8

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About Our CONTRIBUTORS

HOWARD A. HARTMAN, D.D.S. (Western Reserve University, School of Dentistry, 1928) emphasizes periodontia in his general practice. We present here the first of two articles by Doctor Hartman on THE PRESENT DAY CONCEPT OF VINCENT'S INFECTION.

JAMES ARTHUR MALCOLM, D.D.S. (University of Pittsburgh, School of Dentistry, 1923) presented THE OCCLUSAL REST IN PARTIAL DENTURE CONSTRUCTION in June 1943. In this issue Doctor Malcolm describes TECHNIQUES FOR TAKING ACCURATE EAR IMPRESSIONS.

LIEUTENANT COMMANDER DONALD EVAN CALLAR (DC) USNR received his D.D.S. from the Medical College of Virginia, School of Dentistry, in 1939. He discusses the differential diagnosis and the treatment of moniliasis (thrush) of the oral mucous membranes.

SAUL LEVY (B.S., 1924, and D.D.S., 1928, University of Illinois, College of Dentistry) is a general practitioner. Doctor Levy wrote for us in March of this year on REINFORCEMENT IN ACRYLIC BRIDGE CONSTRUCTION. This month he discusses the principles of the mucostatic procedure in his article, SCIENCE VERSUS TECHNIQUE IN TAKING A FULL LOWER IMPRESSION.

P. PHILIP GROSS, D.D.S. (Thomas W. Evans Dental Institute, University of Pennsylvania, 1922) has contributed frequently to this publication. He suggests here a technique for obtaining elastic traction in treating fractures of the jaws.

*The Present Day Concept of Vincent's Infection**

HOWARD A. HARTMAN, D.D.S., Cleveland

This first of two articles on Vincent's infection presents the symptoms and the etiologic factors involved in the disease, and the method of arriving at an accurate diagnosis. Stress is placed on the importance of roentgenograms in obtaining a clear appreciation of the clinical symptoms of the condition, and of thorough microscopic examination and careful history taking to rule out oral manifestations of systemic diseases.

In next month's issue the factors involved in distinguishing Vincent's infection from marginal gingivitis and marginal periodontitis will be discussed, as will be the technique of treatment in eliminating the infection.

Fig. 1—Normal healthy mouth with normal gingival sulcus, healthy periodontal structures, and well balanced articulation.

As MEMBERS of the dental profession, we must appreciate the contributions of our predecessors in medicine, and we should regard highly the medical aspects of dentistry. It is important that we understand the significance of the following quotation by Sir William Osler, the "Father of Modern Medicine:"

"There is not one single thing in preventive medicine that equals in importance mouth hygiene and the preservation of teeth." (See Fig. 1.)

Symptoms of Vincent's Infection

One of the most prevalent and flagrant diseases of the oral cavity is Vincent's infection. In the study of Vincent's, one must first understand and appreciate the definition of this acute involvement.

Vincent's is an acute, infectious, destructive disease of the gingival margins and papillae, rapidly extending to the adjacent gingival tissue, and characterized by:

1. Intense fetid odor.
2. Excessive salivation.
3. Clean punched-out ulcers.
4. Pseudomembrane.
5. Severe pain.
6. Fever.
7. General malaise.
8. Enlarged mandibular lymph nodes.
9. Nocturnal hyperactivity.

These symptoms are usually found

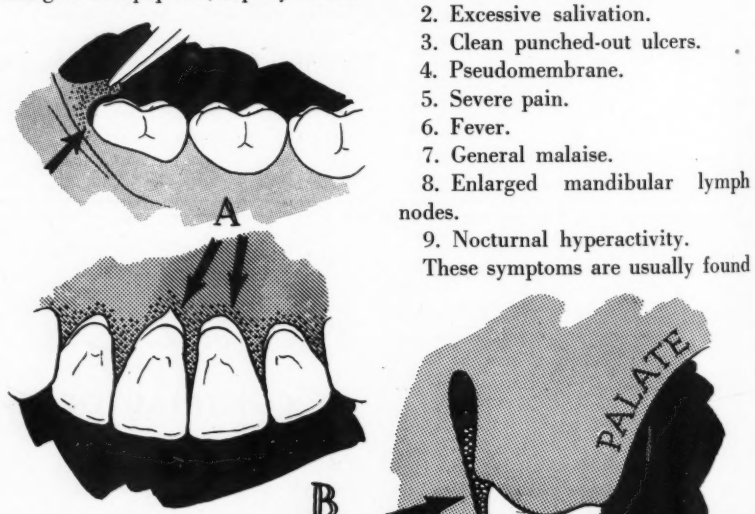


Fig. 2—Primary incubation zones: (A) Operculum over and crypts about lower third molar. (B) Lingual pockets on upper central incisors. (C) Buccal gingiva on upper first molar showing an area of trauma induced by deposits of calculus from secretions of Stensen's duct.

*This is the first of two articles on Vincent's infection. The second will appear in the September issue. It will compare and contrast the condition with other oral diseases and will present a technique of treatment.

in the mouths of men between the ages of 16 and 30. In the present generation, however, the disease has shown a marked increase in women, probably due to their adoption of habits heretofore practiced primarily by men, smoking and the consumption of alcoholic beverages. Sometimes the forementioned symptoms are found in children between the ages of 3 and 6.

Etiology

A brief retrospective analysis of Vincent's infection will aid materially in understanding the causes and processes of this disease. The first recorded reference to an oral affliction answering the description of what we now call Vincent's infection dates back to 401 B.C. From that time to the present, this disease has been associated with periods of war and depression, when people are subjected to abnormal and often unsanitary living conditions, which preclude proper diet, normal vitamin consumption, ample rest, and, perhaps most important, adequate oral hygiene.

In order to combat the processes of Vincent's disease, it is essential that we appreciate its etiology. The organisms responsible for Vincent's disease are secondary invaders and come only to an area of necrosis or low tissue resistance. Consequently, in considering the etiology of this affliction, an appreciation of the systemic picture of the patient is essential. Systemic diseases, systemic breakdown or unbalance, manifest themselves in the oral cavity. The involved supporting structures, being of a lowered tissue resistance, consequently invite the invasion of the micro-organisms of Vincent's disease.

Equally important in etiology is the factor of lowered oral tissue tone. Local etiologic factors which invite the invasion of Vincent's infection are as follows:

1. Extensive caries with consequent loss of contact of teeth, permitting food impaction and subsequent traumatization of the supporting structures.

2. Broken-down roots and their incumbent pockets, and supporting structure irritation.

3. Calcareous deposits causing a destruction of the lining epithelium of the gingival crevice (Fig. 2).

4. Erupting lower third molars with their ever present crypts, which, according to Harold Keith Box[1] and others, afford a primary incubation zone for the organisms of Vincent's (Fig. 3).

5. Ill-fitting removable dentures and their subsequent traumatization of the supporting structures.

6. Excessive use of alcohol, tobacco, and spicy condiments, causing a chemical trauma which results in lowered tissue resistance.

7. Overhanging restorations and crowns, causing a destruction of interdental papillae and the alveolar crest, and a subsequent pocket formation which unquestionably acts as a secondary incubation zone.

8. Poor oral hygiene, such as poor cleaning of the teeth and lack of tissue stimulation, resulting in poor blood supply and lowered tissue resistance.

Organisms Involved—The two organisms associated with Vincent's infection are the fusiform bacillus and the spirochete. In the past they generally have been considered working in symbiosis, the spirochete acting as a saprophyte on the fusiform bacillus, the latter being the aggressor. Present day findings intimate that the spirochete may be a degenerated form of the bacillus in its life cycle. This is borne out by the microscopic analysis of the organisms by various men who report that on the onset of the disease a smear of the lesion will show a preponderance, to the point of pure cul-

[1]Box, H. K.: Twelve Periodontal Studies, Toronto, The University of Toronto Press, 1940, page 206.

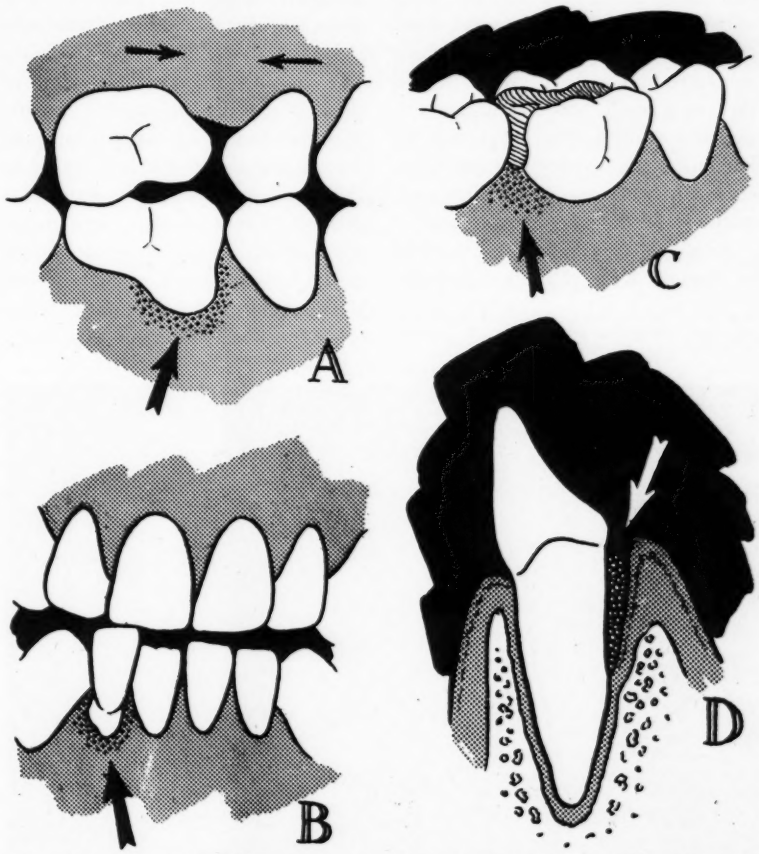


Fig. 3—Secondary incubation zones: (A) Area of gingival inflammation and recession caused by traumatic relationship with opposing teeth. (B) Gingival tissue traumatized by calcareous deposits at cervix of lower incisor. Note the traumatic relationship of the tooth with the opposing teeth. (C) Area of inflammation induced by overhanging restorations and crowns. (D) Lingual pockets on lower anterior teeth.

Fig. 4—The gingival tissue directly opposite where the cigaret was customarily held is involved by Vincent's. This patient smoked excessively.

ture, of fusiform bacilli. Two or three days later, the microscopic picture will show the fusiform bacilli to be decreasing in number and the spirochetes increasing. Some men claim to have separated one bacillus from a culture and to have grown it, and that, as a result, both bacilli and spirochetes evolved. The belief that the bacillus is the invader and the spirochete an accessory factor, however, seems to be the general consensus.

Etiologic Conclusions—According to Rudolf Kronfeld,[2] the pathogenicity of these micro-organisms is doubtful. They are found in apparently healthy mouths and there is no definite correlation between their form, number, or other characteristics, and the clinical manifestations of Vincent's infection. In view of this, it can be understood readily that the underlying or predisposing factors are of decisive importance in the development of the disease. It is difficult to explain why micro-organisms which are present in almost every human mouth should at one time produce severe clinical symptoms and at another time apparently be entirely harmless. It seems that any condition, whether it is traumatic, metabolic, toxic, or infective, may reduce the resistance of the gingival tissue to a point where the ordinarily saprophytic micro-organisms become pathogenic and invade and destroy the tissues. Lack of oral care is the main predisposing factor because it favors the development of all kinds of organisms and reduces the local tissue resistance.

Clinicians generally agree that the disease is rarely seen in an edentulous mouth; also, that it is seldom seen in a well cared for mouth. Therefore, in reviewing both the systemic and the local etiologic factors, we may safely conclude that any factor, or any combination of factors, which upsets the tissue resistance balance of the oral cavity will materially aid the inception and the progress of Vincent's infection. Bearing in mind that the health of the oral cavity is directly influenced by systemic diseases with resulting loss of tissue tone, systemic diseases are important etiologic considerations because they invite secondary infection by the organisms of Vincent's. Conversely, we may also conclude that in a healthy mouth of a healthy person there can be no Vincent's infection.

[2]Kronfeld, Rudolf: Histopathology of the Teeth and Their Surrounding Structures, ed. 2, Philadelphia, Lea and Febiger, 1939.

Fig. 5—Typical bismuth line following intravenous injections in the treatment of syphilis.

Diagnosis

The forementioned etiologic factors concerning Vincent's infection are exceedingly important in arriving at a correct diagnosis. In order to diagnose properly a lesion of the oral cavity which may be Vincent's infection, one must appreciate the pathologic aspects and pathogenicity of the organisms involved, and have a clear histopathologic picture of the lesion. It is generally believed that any factors which will lower the local tissue resistance will invite the ingress of the organisms of Vincent's. Among these factors are:

1. Accumulation of calculus.
2. Faulty restorations.
3. Overhanging crowns.
4. Traumatic prosthetic appliances.
5. Avitaminoses B and C.
6. Poor oral hygiene.
7. Excessive use of tobacco and alcoholic beverages (Fig. 4).

8. Oral manifestations of systemic diseases.

9. Oral manifestations of drugs used in the treatment of systemic diseases, such as the bismuth line following intravenous injections in the treatment of syphilis (Fig. 5).

Histopathologic Factors—It has been observed histopathologically that, in making a study of an ulcer or lesion of Vincent's infection, the marginal area of the lesion contains: (1) Many cocci; (2) fusiform bacilli; and (3) a few single spirochetes. The intermediate area contains masses of fusiform bacilli, surrounded by shreds of necrotic tissue, detritus, pus cells, and broken erythrocytes. The innermost section contains many leukocytes, remnants of fusiform bacilli, often forming long chains. The tissue adjacent to the lesion is completely free from bacteria.

From these observations, the following conclusions may be drawn: The fusiform bacilli are the aggressors and are responsible for the infection inasmuch as they are always found within the protective walls of the leukocytes, which nature has created to stop the invading bacteria. The spirochete and other organisms probably are involved as harmless saprophytic agents.

Consideration of Systemic Diseases—In an examination of a patient supposedly suffering from Vincent's infection, it is important that oral manifestations of systemic diseases are ruled out. It should be recognized, however, that these manifestations of systemic diseases create areas of lower tissue resistance which are often invaded secondarily by the organisms of Vincent's disease. Systemic diseases to be considered are:

1. The leukemias.
2. Diabetes mellitus.
3. Lichen planus.
4. Agranulocytosis.
5. The anemias.
6. Herpetic stomatitis.
7. Lesions evidenced in children with acute exanthematous diseases.
8. Syphilis.

In a study of new admissions, primarily syphilitic (Fig. 6), to the Cleveland State Hospital, it is interesting to note that on microscopic analysis of smears of their mouths, a majority of these patients showed a picture of almost normal oral flora. On institution of treatment for syphilis, intravenous injections of bismuth, and as the characteristic bismuth line manifested itself, the incidence of the fusiform bacillus and the spirochete increased. This again indicated that where the gingival tissue resistance is lowered, there is usually a secondary invasion by fusiform bacilli and spirochetes.

Fig. 6—In the observations of 100 patients with syphilis on admission to Cleveland State Hospital, smears of their mouths microscopically showed virtually a total absence of fusiform bacilli and spirochetes. After the institution of bismuth treatments intravenously, and as the typical bismuth line manifested itself, the prevalence of the two organisms increased in proportion apparently to the degree of manifestation of the bismuth line as seen in the illustration. These studies again substantiated the fact that any factor which lowers the local gingival tissue resistance will invite the secondary invasion of these micro-organisms. Conversely, upon establishment of a high degree of oral hygiene and conservative treatment to the gingival tissues, the prevalence of fusiform bacilli and spirochetes diminished.

Preliminary Diagnosis

The three cardinal factors of the preliminary diagnosis are as follows:

1. Clinical symptoms, aided by roentgenographic examination.
2. Microscopic examination.
3. History.

The clinical symptoms, as previously mentioned, are:

1. Gray pseudomembrane, which on disturbance causes hemorrhage.
2. Clean punched-out ulcers.
3. Pain on mastication.
4. Rise in temperature.
5. Characteristic fetid odor.
6. General malaise.
7. Nocturnal hyperactivity.
8. Sudden onset.
9. Metallic taste.
10. Anesthetic characteristic of periodontal membrane.
11. Loosening of the teeth.

Roentgenography—The roentgenogram is an essential aid to an appreciation of the presented clinical symptoms. It will show crypts around third molars which may be primary incubation zones. The elimination of these crypts will readily stop the metastases of the infection. The roentgenogram likewise illustrates pockets, overhanging restorations with their incumbent calcareous deposits, and, perhaps to some degree, the pathosis which is brought about by traumatic occlusion. A full-mouth roentgenogram should be taken at the time of the patient's first visit. It will be of immeasurable value, not only in the diagnosis of Vincent's, but also in the elimination of this infection.

Microscopy—The next step in an

attempt to arrive at a diagnosis is a microscopic examination. It is agreed that the organisms of Vincent's infection are to be found in virtually all mouths. We do notice, however, that they are more prevalent in mouths of patients with poor oral hygiene, poor dentistry, undernourishment, or vitamin deficiency. The conclusion can be drawn, therefore, that in a mouth with true Vincent's infection the number and prevalence of the organisms are increased greatly over those found in the microscopic picture of the oral flora of an average mouth (Fig. 7).

The microscopic examination may be made by staining the smear with either Gram's stain or Löffler's methylene blue. Either of these staining methods should yield a good bright field picture and show the presence and prevalence of all components of the oral flora. According to Prinz and Greenbaum,[3] a clinically true case will present virtually a pure culture of Vincent's organisms, the fusiform bacilli and the spirochetes.

The importance of a careful microscopic examination cannot be overemphasized. No diagnosis can be made unless both the clinical and microscopic pictures are correlated.

History Taking—The next factor to be considered in arriving at a diagnosis is the history of the case:

1. It is essential that we learn the degree of oral hygiene and oral care insofar as toothbrushing and gingival care are concerned.

2. The patient should be quizzed in regard to smoking and drinking habits.

3. It is important to know the amount of rest he is accustomed to having.

4. Inquiry should be made into his occupational practices.

5. A study of the diet and nutrition of the patient should be made. In the case of a woman the factor of pregnancy should be considered (Fig. 8), inasmuch as the hypertrophic gingivitis caused by vitamin C deficiency in the expectant mother may readily be confused with a recurrent Vincent's infection.

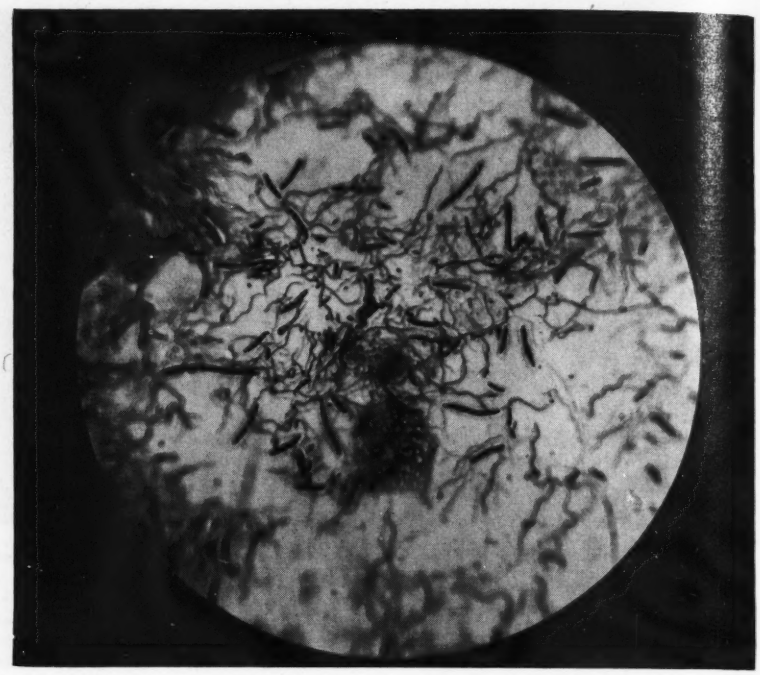


Fig. 7—Microphotograph of a smear made of an acute Vincent's lesion. Note the abundance of fusiform bacilli and spirochetes, and the relative absence of other components of the oral flora. (Courtesy Maynard K. Hine)

Fig. 8—Gingivitis of pregnancy, which can be the site of invasion by Vincent's organisms. Treatment should be conservative.

6. A study should be made of the patient's medical history for an appreciation of any systemic diseases in relation to his general physical picture.

(To be concluded in the September issue.)

[3]Prinz, Hermann, and Greenbaum, S. S.: Diseases of the Mouth and Their Treatment, ed. 2, Philadelphia, Lea and Febiger, 1939, page 174.

A Simplified Method of Obtaining Elastic Traction in Treating Jaw Fractures

P. PHILIP GROSS, D.D.S., Philadelphia

A technique is suggested whereby the fractured jaw can be held comfortably in the desired position, with traction in an upward and anterior direction, to prevent deformity after healing. The felt skull cap, which is cut to fit the patient, is adjustable and can be applied and removed easily.

HIPPOCRATES wrote, "One should bear in mind that bandaging a fractured jaw will do little good when well done, but will do great harm if done badly." This is as true today as it was then.

Results Desired

Barton's bandage has long been considered by some as the standard in the treatment of fractures of the jaws. While it does support the mandible in its vertical turns, the anteroposterior neck turn of Barton's bandage is responsible for a backward displacement of the fragments, which results in deformity of the jaw.

Bandages or appliances used as adjuncts to the treatment of fractures of the jaws should exert a pull on the mandible in an upward and an anterior direction. This upward and forward line of force is necessary to counteract the natural tendency to downward and backward displacement of the fragments.

Technique for Elastic Traction

In place of a bandage, I have found the felt hat an easy and convenient means of obtaining the desired upward and forward traction.

1. The felt hat is cut so as to separate the crown from the brim. The crown is placed over the patient's head as a skull cap and is trimmed to follow the lines of the ears and the forehead. The sides over the cheeks are left long (Fig. 1).

2. Two buttons are sewed on each cheek extension, and laces are sewed to the back of the crown to permit adjustment of the crown to the head (Fig. 2).

3. The brim which was cut off is dampened and stretched into a straight band. It is then cut to a suitable width and length to fit under the chin from one cheek extension of the cap to the other. Buttonholes are made to fit the buttons on the cheek extensions.

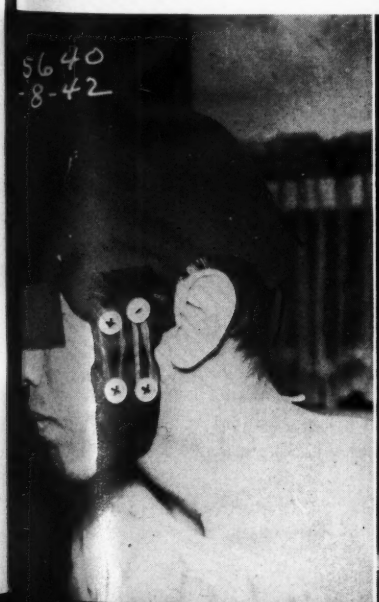
4. Two buttons are sewed to the chin band about 2 inches below the buttonholes on either side.

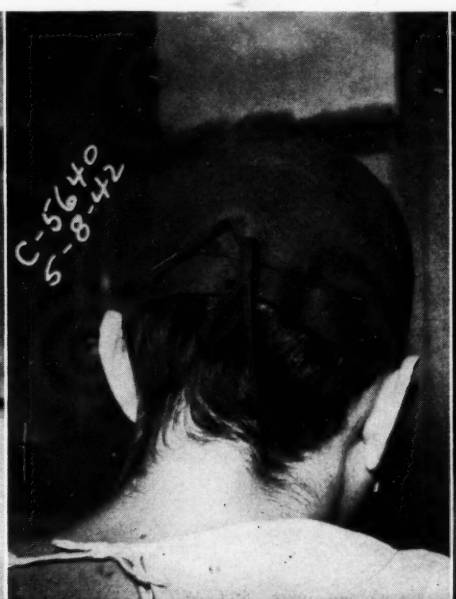
5. The chin band is placed under the chin and is buttoned to the side extensions. Rubber bands are placed from each cap button to the button below it on the band and are adjusted to the desired degree of traction (Fig. 3).

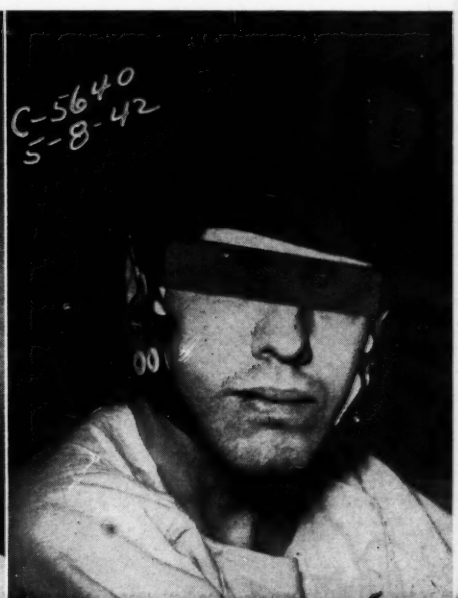
6. To prevent chafing of the skin, the inner side of the chin strap is lined with gauze dusted with boric acid powder. Small holes are cut in

(Continued on page 411)

***Fig. 1** (Left)—Crown of felt cap trimmed to fit head, with extensions extending down to cheeks. Traction is effected by tightening the rubber bands between the buttons.*
***Fig. 2** (Center)—Laces sewed in back of cap permit adjustment.*
***Fig. 3** (Right)—Note: A gauze lining is placed in the chin strap to prevent chafing.*







Techniques for Taking Accurate Ear Impressions

J. ARTHUR MALCOLM, D.D.S., Pittsburgh

The dentist is well prepared to make replacements of lost anatomic parts, such as the ear, because of his familiarity with the techniques of making the necessary accurate models and with the materials used in the replacements.

The marked variations in size and structure of the ear result in numerous problems in the taking of accurate impressions. An analysis of these problems is made and the different impression techniques are presented.

THE DESTRUCTIVE forces of war and the hazards of stepped-up industrial activity necessary to the waging of war inevitably result in the maiming of thousands of people. When the injuries cause permanent and obvious disfigurement, the plight of the victim is tragic. The marvels of plastic surgery have done much to alleviate the suffering. Even plastic surgery, however, has its limitations, and fails when entire organs or appendages, the ear among others, are lost.

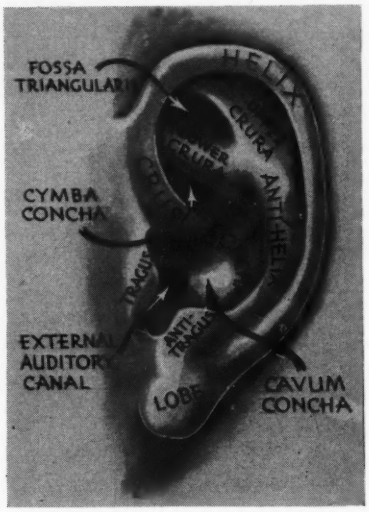
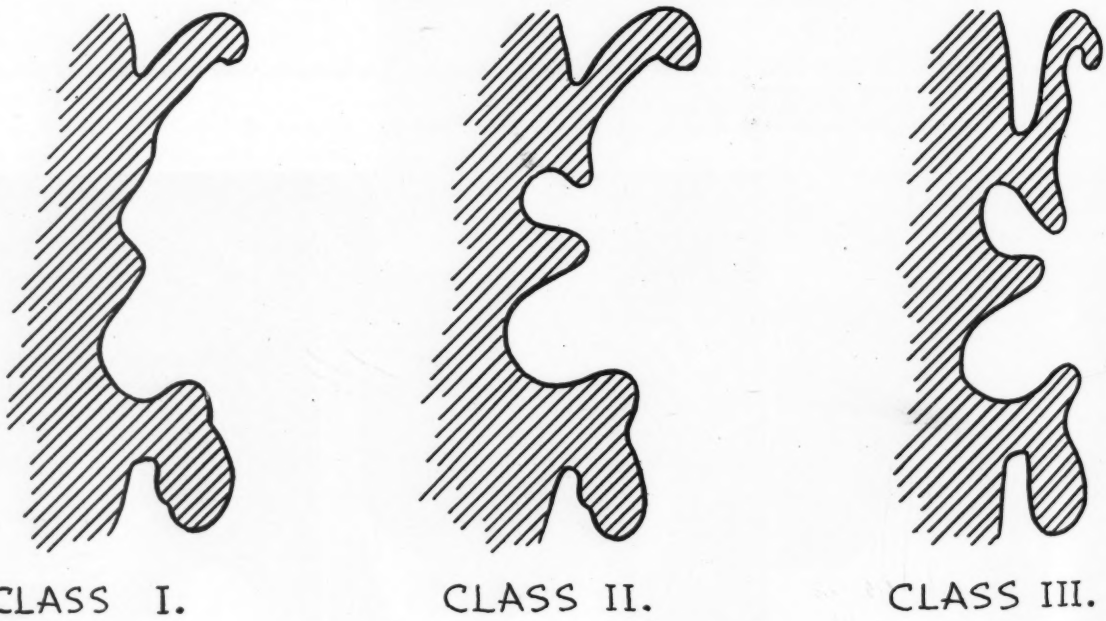


Fig. 1—Above: The parts of the external ear. Below: The classifications of the external ear according to differences in anatomic structure (cross section).

This fact stimulated the search for materials from which replacements for lost anatomic parts might be produced. Research in modern chemistry has produced plastics which, when skillfully handled, resemble body tissues to a degree that almost defies detection. There is no doubt that in time many improvements will be made.

To produce these replacements an accurate pattern or model is of the utmost importance. In the case of a lost ear, a model may be obtained by taking an impression of an ear similar in size and shape from another person. The model thus produced would be used as a direct pattern. An impression may also be taken of the patient's remaining ear to produce a model for sculpturing a direct pattern. The dentist, by his training and experience and his familiarity with



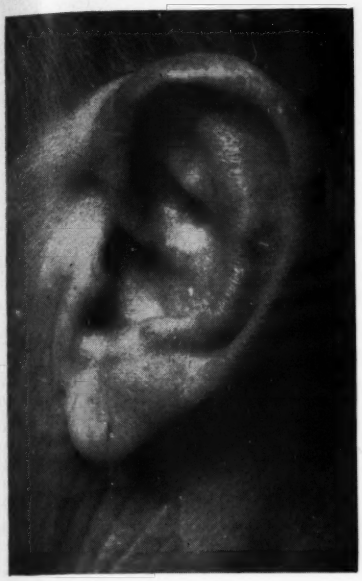


Fig. 2—Class I ear: The least complicated in anatomic structure.

the materials with which impressions may be secured, is well equipped to take such impressions. This article is devoted to an analysis of the problems in taking such impressions, and a technique is suggested for solving them.

Anatomic Variations

Just as no person is identical in appearance to another, so do ears vary in form and size. These variations seem to be more marked in the ear than in other organs, possibly because the ear is an extremely complex and irregular organ. Ears are not only different in general outline, but there is a wide difference in the degree of prominence and in the angulation of the various ridges. Dissimilarities also occur in the extension, shape, and depth of the depressed areas, in the size of partly enclosed cavities, and in the width of the apertures leading into these cavities. These variances, of course, determine the degree of undercuts and counter-undercuts, and must be taken into consideration if a perfect impression of the ear is to be obtained for the purpose of producing a plastic duplicate.

In addition to the forementioned differences in size and form, there are wide variations in the thickness, firmness, and degree of elasticity of the yellow fibrocartilage of which the bulk of the external ear is composed. This must be taken into account in deciding on impression methods and in determining the type of impression material to be employed. The materials we have used for taking impressions of the ear are the hydrocolloids; the alginates; the plasters, including Plasto-gum; and those compounds containing starch, which permit dissolving the impression from around the model in boiling water. The advantages and reasons for selection of any of these materials will be mentioned during the description of the impression methods used. To facilitate the description of impression methods, the ears are divided roughly into three classes according to the differences in anatomic structure (Fig. 1).

Class I Ear

Anatomic Detail—The class I ear, illustrated in Figure 2, is the least complicated in anatomic structure.

1. This ear generally is rather thin in structure and pliable.

2. The entire external surface of the auricula within the boundary of the helix is quite open.

3. The antihelix and its lower crura, just above the concha, is not prominent.

4. The concha itself, while comparatively large, does not extend to any great degree backward underneath the antihelix, nor far downward beneath the antitragus, nor upward beneath the lower branch of the antihelix.

Fig. 3—Class II ear: Anatomic structure more pronounced than in the class I ear.

Fig. 4—Class III ear: Anatomic detail most pronounced in this ear.

5. A one-piece impression of an ear of this type can be made readily using hydrocolloid impression material.

Impression Technique—1. Lubricate the ear and adjacent facial and cranial parts with a thin coating of vaseline.

2. Chop fine or shred hydrocolloid material into the upper section of a double boiler, and add water up to a maximum of one-third hydrocolloid volume depending on the brand and number of times the hydrocolloid has been used. Heat in a double boiler and stir until all solid particles of the hydrocolloid have been dissolved and a uniform, thick, creamy mass is obtained. Remove the upper section of the double boiler and cool by holding the pan in water while constantly stirring the material, being careful to stir both the bottom and the sides to maintain a uniform mass. When the temperature of the hydrocolloid is lowered to the point of tissue tolerance the impression may be started.

3. Place a cotton plug in the external auditory canal. The pa-

Fig. 5—First section of plaster applied between ear and cranium from bottom attachment of lobe to the top of the ear. Horizontal wedges ensure proper fit of other sections.

tient should be lying on his side.

4. Using an artist's brush, paint a thin layer of hydrocolloid into and over all parts of the exposed ear and over the adjacent cranial and facial surface to the extent desired. Wait a few moments until setting has progressed to the point where the surface tackiness of the material has disappeared.

5. Continue to paint successive layers, covering the entire area each time before proceeding with the next layer, thus permitting the material to set from the tissue surface *outward* as the impression is built up. When the hydrocolloid has been applied to a depth of approximately 3/8 inch, permit it to set until it loses surface tackiness.

6. Make a thin mix of Plasto-gum. (The proportions of powder and water recommended by the manufacturer seem to be about ideal for the purpose.) Apply a layer 1/8 to 1/4 inch thick over the entire mass of the hydrocolloid material. As soon as the Plasto-gum is set, the impression is ready to be removed. *Note*: Plasto-gum is selected rather than plaster for the following reasons: (a) It may be applied quite thin without running; (b) it sets quickly and uniformly to good strength; and (c) it seems to adhere better to the hydrocolloid than plasters do.

7. Raise the impression gently from the cranial surface behind the ear, drawing it slightly backward at the same time. This may free the helix and the lobe. Work a finger underneath the impression to the cranial surface of the concha and apply pressure to dislodge the material within the concavity of the concha. Complete the removal of the impression by withdrawing it backward and outward, with a slight upward rotation to permit withdrawal of the material from the external auditory canal.

8. The model should be run immediately, inasmuch as the Plasto-gum support and the atmosphere will dehydrate the hydrocolloid rapidly, causing fissures to occur.

9. If a wax pattern is to be made from the original impression, it is undesirable to place the impression in water to preserve it; any moisture remaining in it will cause the wax to bubble and thus mar the surface detail.

Class II Ear

Anatomic Detail—In the class II ear, illustrated in Figure 3, the anatomy of the external ear is much more pronounced than in the class I ear.

1. The helix folds in toward the central concavities, resulting in some undercutting from the region of the crus, up and over the top of the ear, to a spot about opposite the crus on the back of the ear.

2. Both the upper and lower crura of the antihelix are more prominent, causing a deep depression of the fossa triangularis.

3. The crus itself is also prominent, extending farther across the concha and more definitely dividing the cymba concha from the cavum concha.

4. The diameter of the concha at its outer edge may be smaller due to the forementioned prominence plus a prominent antitragus, but it expands inwardly, resulting in under-

cutting behind the antitragus, the rising body of the antihelix, and the lower crura of the antihelix.

5. The general structure of the ear may be a little firmer and lack some of the elasticity present in the class I ear.

6. It naturally follows that an ear of this type would require a stronger or tougher impression material than the class I ear would require if the impression is to be removed without fracture. Otherwise the impression would have to be taken in sections. In the one-piece impression, one of the alginates makes a good material.

One-Section Impression Technique—1. Lubricate the ear and adjacent facial and cranial parts with a thin coating of vaseline.

2. Mix the alginate considerably thinner than for an intra-oral impression. A thick, creamy mass is about ideal.

3. Place a cotton plug in the external auditory canal. The patient should be lying on his side.

4. With an artist's brush, apply a thin application of the alginate into all the undercuts and over the external aspect of the ear. Then completely fill in the area between the cranium and the cranial parts of the ear. By this time the alginate is stiff to a degree at which it will support the ear in normal position. The final application of the alginate completely covers the ear and the adjacent cranial and facial areas desired.

5. Apply a thin coating of Plastogum, the same as for the class I ear, and remove the impression in the same manner.

6. In the event that a stone or plaster model is desired, the impression should be treated in a copper sulphate or other chemical bath as recommended by the manufacturer of the alginate.

Sectional Impression Technique—A two-piece sectional impression in class II cases gives a surer result with less possibility of tissue distortion when the impression is being taken.

1. Lubricate the external ear with vaseline; and the cranial sections, where hair is present, with a mixture of vaseline and talcum. The hair may be covered with moist cellophane, tin foil, or some other thin substance.

Fig. 6—Second section of plaster includes lower half of ear, up to the crest of the crus.

2. Place a cotton plug in the external auditory canal. The patient should be lying on his side.

3. One of the plaster and starch compounds which dissolve in boiling water is used for this sectional technique. A creamy mix of plaster is made.

4. The ear is raised slightly from the cranial surface, and the space between the ear and the cranium is slightly overfilled from the attachment at the front and bottom of the lobe entirely around the back of the ear to the attachment of the ear at the top. The ear is permitted to seat itself in the soft plaster. Extension of the plaster is made to include whatever cranial surface is desired.

5. The plaster is trimmed along the crest of the helix at the point where it begins to fold over toward the external ear surface. Several horizontal wedge cuts are made on the surface of this section for future fitting together of the sections.

6. A separating medium is applied to all exposed surfaces of the first section, and a similar mix of plaster is made for the second section. *Note*:

The first section of plaster is not removed or disturbed in its position until the impression is completed.

7. Using an artist's brush apply the plaster to all cavities on the external ear and completely cover all parts to a minimum of ¼ inch.

8. When the plaster has set, slightly separate the plaster sections with an instrument. Raise the impression slightly from the cranial surface at the back and withdraw the first section in a backward direction.

9. Work the helix and lobe gently from its position in the second section. Place the finger on the cranial surface of the concha, and press outward gently. Now raise the back of the second section and withdraw it with a backward and outward motion to free the plaster from the undercut in the cymba concha, finally rotating the section upward slightly to complete removal from the external auditory canal.

Class III Ear

Anatomic Detail—In the third class ear the anatomy is quite pronounced, as is shown in Figure 4.

1. The helix, in this case, folds in toward the central concavities, producing rather extensive undercuts throughout its length.

2. The antihelix is prominent throughout its main body and the two crura, and the fossa triangularis is deep.

3. The lower crura of the antihelix extends forward well beneath the fold of the helix at the front of the ear.

4. The crus is prominent, extending diagonally downward and backward across the entire diameter of the concha.

5. The antitragus is prominent, as is the tragus, thus constricting the aperture into the cymba concha.

6. The cavum concha extends downward beneath the antitragus and backward beneath the antihelix.

7. A series of undercuts and counter-undercuts are present which make removal of elastic impressions impossible without breakage and the removal of harder impression materials most difficult without laceration of the ear itself.

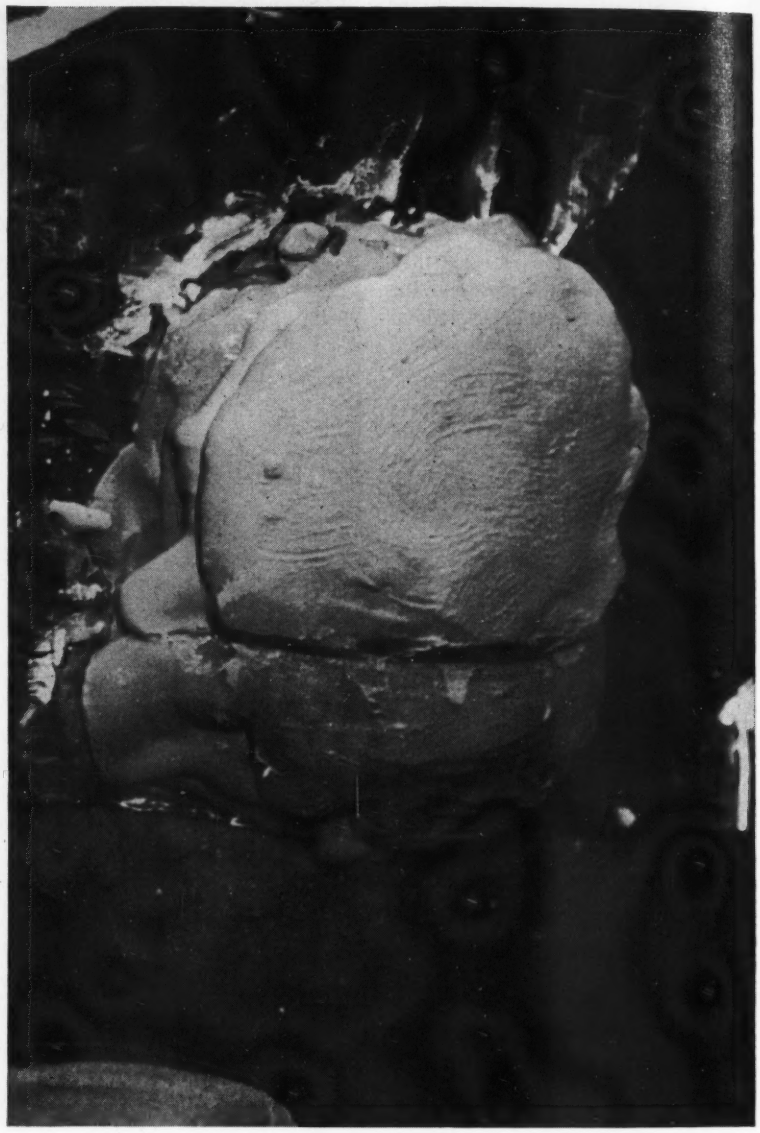


Fig. 7—Third section of plaster applied to cover upper half of ear.

Impression Technique—An impression of this type of ear is best obtained by a three-section method in a plaster material. To facilitate the removal of the model from the impression one of the materials which dissolve on boiling is used.

1. The patient's ear is prepared as for taking a one-section or two-section impression.

2. A creamy mix of the plaster is made and the first section is applied in the same manner as suggested for a class II ear (Fig. 5).

3. The lower part of the ear is included in the second section (Fig. 6). This part comprises the entrance of the external auditory canal, the cavum concha, the lobe, the tragus, the antitragus, and adjacent facial parts in front of the ear. This section is terminated at the crest of the crus.

4. When the plaster of the second section is partly set, trim the surface next to the area to be covered by the third section to a definite edge along the crest of the crus, and cut in wedge grooves for registering the assembly.

5. Apply a separating medium on this section, and complete the final impression in the same manner as the material was applied for the second section (Fig. 7).

6. When the plaster has set, separate the three sections slightly using an instrument at the back of the ear. Raise the impression slightly from the cranium, and withdraw the first section in a backward direction. Work out the helix and lobe gently; raise the third section at the back and withdraw it from the ear in a backward and outward direction. Place the finger on the cranial surface of the concha and press outward to aid the release of the second section. Partly withdraw the second section in an outward and backward direction, completing the withdrawing from the external auditory canal with a slightly rotating upward and backward movement.

343 *Vanadium Road.*

Moniliasis

Lieutenant Commander DONALD CALLAR (DC) USNR, F.P.O., San Francisco

Moniliasis (thrush) of the mucous membranes of the mouth can be diagnosed positively only by microscopic examination. Immediate microscopy is recommended because the symptoms, the chief of which are the pain and the grayish white membranous patches of the palate, are so often mistaken for less harmful conditions.

Symptoms

Occasionally a denture patient will complain of tenderness and pain in the roof of the mouth. On macroscopic examination the vault of the palate is observed to be coated with a grayish white membranous patch. This area may be small; or it may be extensive, involving the tongue, the membranes covering the hard and soft palates, the alveolus, and the pharynx. The areas may be easily scraped free of the growth, leaving a reddish bleeding surface. A slight odor is usually noticeable and the patient has general malaise.

Diagnosis

This condition is commonly known as thrush and is important because it is a harmful fungus infection, and because it is so often mistaken for an allergic reaction to a denture base material.

The organism involved is *Monilia albicans*. It is readily demonstrable microscopically when stained with carbofuchsin or methylene blue. Observation of the straight or branched mycelium with fertile hyphae, plus the macroscopic finding of the patches, leads to a positive diagnosis.

Prognosis

The prognosis of thrush in itself is good. It is seldom found in persons who receive an adequate diet. Other organic conditions usually exist which will require immediate attention. Inoculation of the *Monilia albicans* into the intestinal tract or bronchial tubes may lead to severe complications.

Treatment

Treatment is both systemic and local. The diet is investigated, especially for vitamin B deficiency, and dietary supplements are recommended if needed.

Local treatment consists of removing the patches as much as possible with cotton swabs. A 1 per cent solution of gentian violet is painted over the infected areas twice daily for three days, then once a day for a week or two. A hydrogen peroxide mouthwash is sometimes helpful. Meticulous oral hygiene by brushing must be maintained constantly.

Case Histories

Case I—This patient, a white man aged 31, had had a full upper denture for seven years. He presented himself at the office with a complaint of pain and "infection" of the hard palate. The area was red and sloughing.

A specimen was taken and stained, and the *Monilia albicans* readily recognized. Treatment was instigated as suggested above. The dentures were not worn for five days, after which the condition had improved enough to permit use of the dentures. Recovery was complete in ten days.

Case II—A white man, aged 44, had had a full upper denture for seventeen years. Three years before this presentation, vulcanite dentures had been made for him. The patient had suffered with painful areas of the hard palate and cheeks for the last three weeks.

The patches were gray to red in color, and were diagnosed as being the result of allergy to the vulcanite denture base. The denture was duplicated in one day. The patient returned in five days with the same complaint and the same condition. A smear was taken and *Monilia albicans* was discovered. Routine treatment with gentian violet, hydrogen peroxide, and good toothbrushing technique resulted in recovery in eight days.

Conclusions

1. Allergy to denture base materials is relatively rare. A microscopic examination of all pathologic conditions of the mouth is recommended to prevent wrong diagnoses.

2. Moniliasis is usually found in unclean mouths. Disuse of the denture for a limited period often gives time for the condition to clear up by itself.

*Science Versus Technique in Taking a Full Lower Impression**

SAUL LEVY, D.D.S., Scranton, Pennsylvania

The following article embodies a set of scientific laws and principles which are actually involved in taking a full lower impression. Manual effort to distort ridge tissue can never give an accurate impression for a well fitting denture base. Whatever method is adopted to take an impression, it can succeed only if the natural laws of physics, mechanics, and physiology are not opposed.

FOR THE LAST several decades the dental profession has approached the problem of taking a full lower impression almost entirely from the standpoint of *technique*. Dental literature is full of *techniques* of every description, and clinicians have flooded the country demonstrating innumerable *techniques* for taking a so-called accurate impression. Every *technique* is presented with the express purpose of making a perfectly fitting denture. It is necessary, of course, to create a variety of reasons for the many approaches, although the end result in all cases must be the same. Inasmuch as the problem is always the same, the correct answer can never be reached by the mere use of different applications. The answer can be found only through the establishment of sound scientific principles.

The *mucostatic* principles for taking a full lower impression were brought to the attention of the dentists in this country by Mr. Harry Page. These are scientific laws of physics, mechanics, and physiology that are worthy of careful study by the profession. All three of these sciences are involved when dealing with impressions taken in the oral cavity.

It is the purpose of this paper to outline the principles of mucostatics and their practical application only as they apply to taking a full lower impression *for the production of a well fitting denture base.* A good impression must result only in a well fitting denture base. Articulation and other factors determine whether this denture base will perform its proper function.

There are four requisites for a successful denture base: (1) stability, (2) retention, (3) muscle freedom, and (4) comfort. It is most enlightening to compare the ideas of *techniques* with the scientific principles of mucostatics as they apply to these important requirements.

Stability

In denture construction stability refers to the finished appliance as it remains steady under functional crushing loads. It has no relationship, nor is it in any way connected, with retention.

So many impression techniques have been presented which involve compression of soft tissue that it is necessary to turn to science in order to determine exactly whether or not soft tissue is compressible. All tissue, according to physiology, is divided into the main components, water and solids. Neither of these is compressible except under enormous loads. According to hydrostatics, it would take at least a ton and a half of impressional pressure per square inch to compress a minute fraction of water (1 in double spread illustration). Inasmuch as water is the most compressible component of soft tissue, the more resistant whole certainly could not be compressed with the practical prosthetic load of approximately 25 pounds overall.

Pascal's Law—There are also the many functional impression techniques which call for anticipation of the tissue displaced under the denture base when a load is applied to the finished appliance. Again science proves that no matter what position is given soft tissue, its ability to support a load is exactly the same. If Pascal's law is applied to a force exerted upon a confined liquid or semiliquid (one of the main components of tissue is liquid), it is found that the force is transmitted undiminished and in all directions throughout the enclosed liquid. Should the liquid be poured into an odd-shaped vessel, the liquid takes the shape of that vessel; and no matter what the shape, the law still applies.

It is concluded, therefore, that insofar as resistance to a load is concerned, the shape imparted to soft tissue by an impression or denture base is immaterial.

Characteristics of Soft Tissue—It is important at this stage to analyze the characteristics of soft tissue. It is the same as liquid in only one respect: It must move as a unit or not at all. Physically it is made up of a mass of fibrous tissue enclosed in mucous membrane, which in its entirety is fastened to the periosteum. Thus its movements are definitely restricted. Soft tissue has an individual as well as a permanent shape.

*All ideas set forth in this paper are the result of a course taken under Mr. Harry Page and Doctor William Dykins. I believe that these facts and principles should be disseminated throughout the profession. If weighed carefully, the individual dentist can create applications which will lead to the construction of a larger number of better fitting dentures.

It has the true power of elasticity and, most important, it has life.

Because of these characteristics, it is impossible, as in the case of a true liquid, for soft tissue to accept just any shape. If soft tissue is to be brought into uniform contact with a denture base, one of two ways must be used: (1) The tissue must be made to accept the shape of the denture base, or (2) the denture base must be adapted to the natural tissue form. In either case if the denture base is not in uniform contact with the tissue, Pascal's law cannot apply because the tissue would be free to move and stability would be interfered with. On the other hand, if in either case the denture base is in uniform contact with the tissue, Pascal's law will apply. The internal resistance and the external load are equal, and the softest tissue becomes in effect an immovable solid (2 in illustration).

Soft tissue also has, however, the qualities of elasticity and life. It will, therefore, refuse to remain passive in any abnormal position; moreover, it will fight to regain and maintain its normal form. In view of this, when no pressure is applied, any appliance would be unseated wherever distorted tissue reasserted itself in an attempt to return to its normal form (3 and 4 in illustration).

It makes no difference, so far as resistance to load is concerned, what position or shape is given the tissues by the denture base. The stability of a denture base is entirely dependent on preventing distorted tissue from returning to normal. The only position in which tissue makes no attempt to return to normal is the already normal position. Then lasting stability can be obtained only from an impression and denture base that are accurate negatives of the ridge tissue in its normal passive form (2 and 12 in illustration).

Retention

Impression *techniques* frequently have been practiced with the idea of obtaining a maximum amount of cohesion, adhesion, atmospheric pressure, or vacuum. It was supposed that one or the other, and sometimes a combination of all these characteristics, played the important role in the retention of a lower denture. A number of the better comparatively recent *techniques* lay important stress on "peripheral seal" as the retentive feature.

Mucostatics, in seeking retention, turns to science for its answer, as does stability. It discards, therefore, any attempt to obtain atmospheric pressure, adhesion, or cohesion in taking a full lower impression. Mucostatics also frowns on "peripheral seal" and ignores lingual flange depths as well. According to science, the retentive factor is wholly the result of what is known as interfacial surface tension. Surface tension of this type operates by virtue of a thin fluid film between two closely fitted surfaces (5A in illustration).

Surface tension, which is one of the most powerful forces in nature, is inversely proportional to the thickness of the intervening film. In other words, the thicker the film, the less retention; and the thinner the film, the greater the retention. Retention is in no way affected by atmospheric pressure. Its power is seriously impaired and soon destroyed entirely, however, if the edges of the intervening moisture film are kept in contact with or are submerged in certain liquids. That is why the character and quantity of saliva play such an important part in the ultimate retention of a denture base (6A and 6B in illustration).

Surface tension shows its maximum power when any attempted separation movement is at right angles to the surface of the moisture film (7A in illustration). It has no power when the separation movement is parallel to the surface of the film (7B in illustration). For this reason the vertical surfaces of a denture base or the lingual and buccal flanges can have no retentive value. Their only value is to prevent lateral movement (7C in illustration). Accordingly the depth, detail, and outline form of the lingual flange can play no part in the retention of the denture base. Inasmuch as interfacial surface tension is responsible for retention, with atmospheric pressure and vacuum eliminated as retentive factors, "peripheral seal" must be discarded as having any retentive value (5B in illustration).

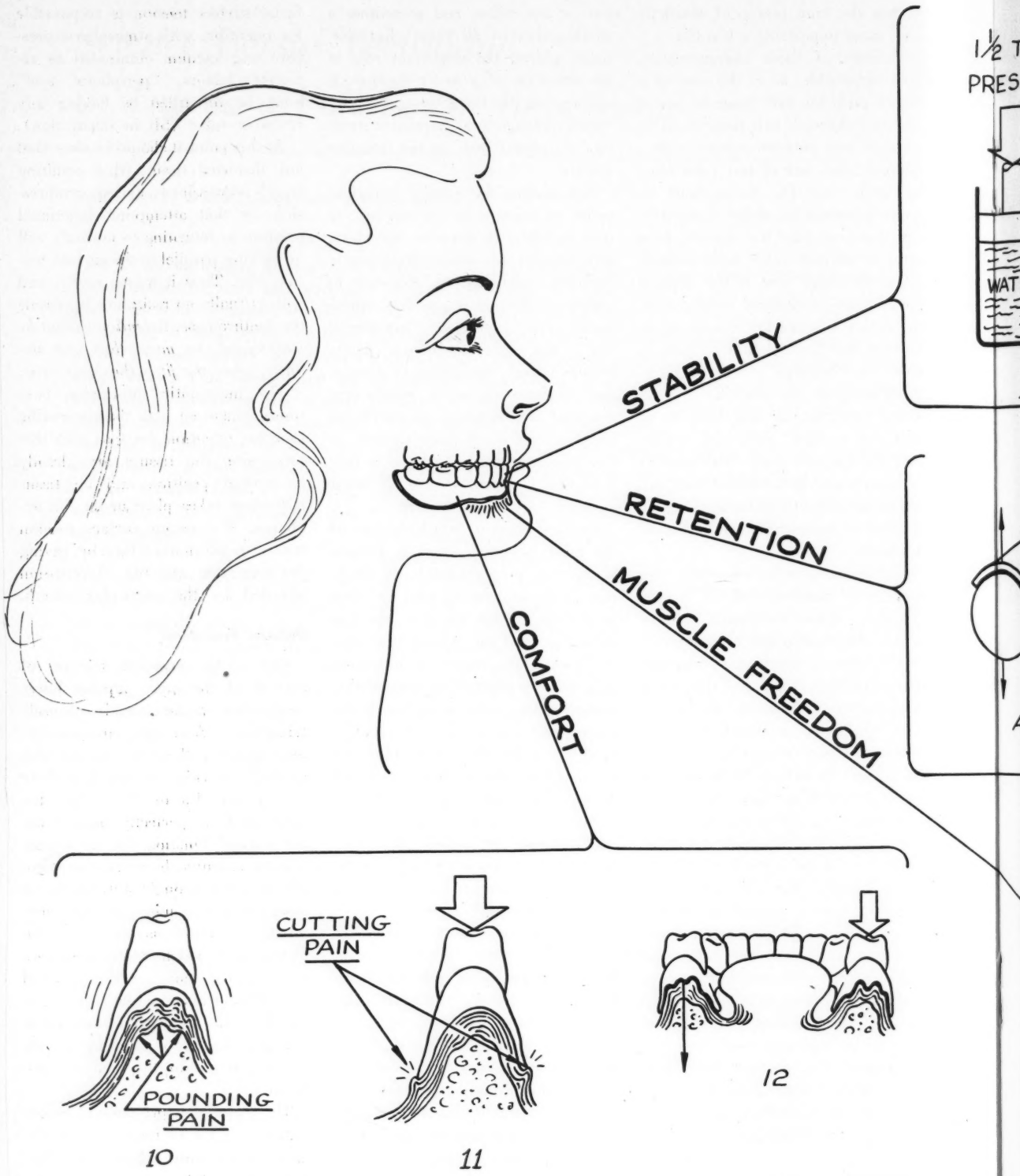
At this point it should be clear that any distorted tissue (that resulting from impressions under compression, or that attempting functional position in returning to normal) will be moving parallel to the surface tension film. Thus it moves easily, and with virtually no resistance it unseats the denture base. *Retention cannot be maintained, no more than can stability, when the fit is thus destroyed.*

The mucostatic impression continues consistent with these scientific laws for retention, because with this impression the tissues are already in normal position and no tissue movement takes place under the appliance. A constant surface tension contact is maintained thereby, giving the maximum quantity of retention afforded by the particular mouth.

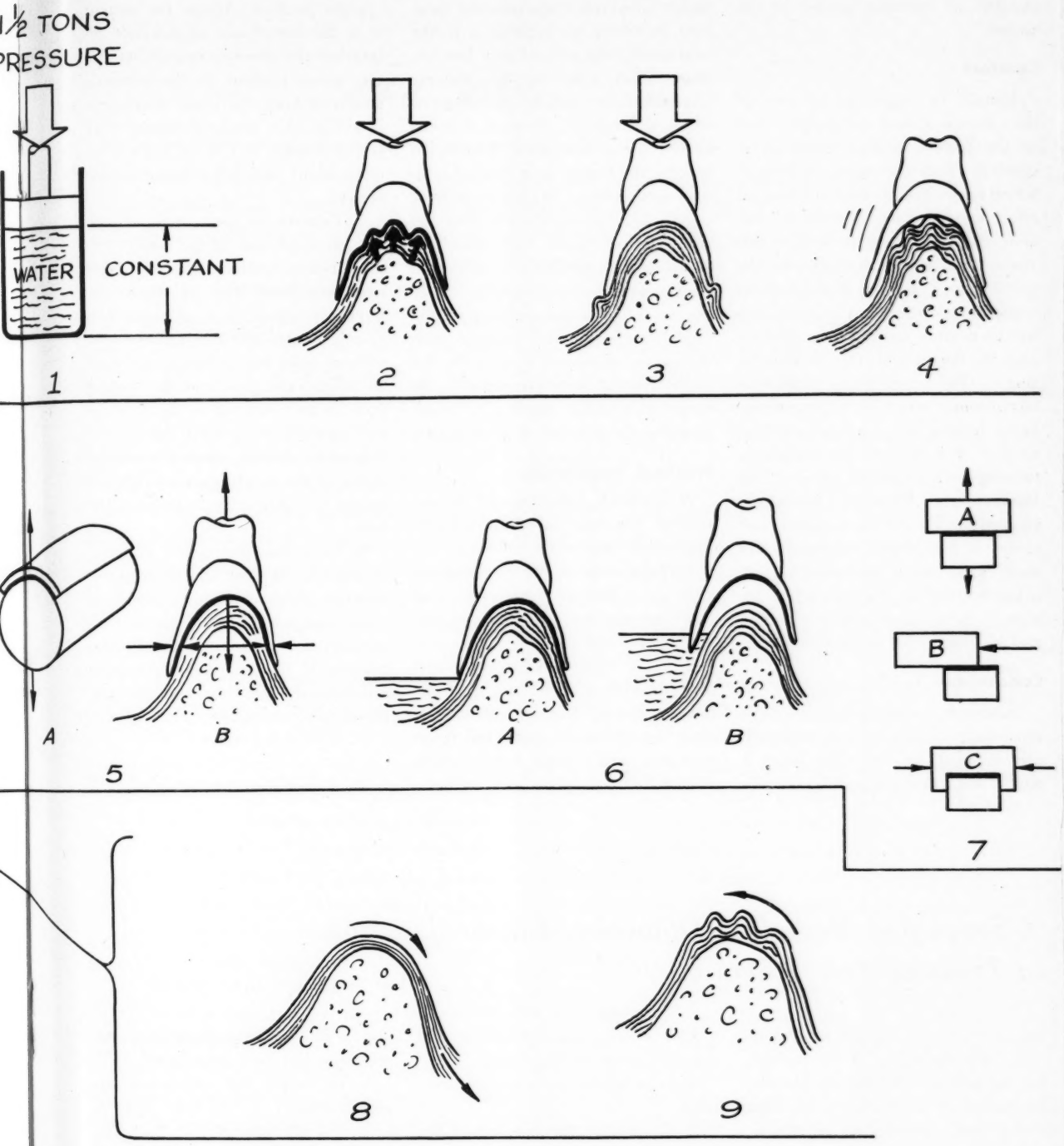
Muscle Freedom

One of the principle features of several of the more popular lower impression *techniques* is "muscle trimming." According to mandibular anatomy there are no muscles on the lower ridge. Inasmuch as there are no muscles on this ridge, the ridge itself is perfectly passive under normal function. In the discussion on stability, however, the scientific fact was brought out that tissue must move as a unit. "Muscle trimming," therefore, is merely a distortion agent which pulls ridge tissues from their normal position (8 and 9 in illustration). While this is being done, the impression material is setting and some of the ridge tissues are frozen out of their normal position.

The paramount principle of mucostatics calls for an impression of the tissue in its undisturbed form. This makes it possible to outline the case, so as to prevent muscle impingement, out of the mouth. At the same time it is possible to vary this outline any way the case demands regardless of the extent of the impression, because



THEORY OF MUCOSTATICS AT A GLANCE



STABILITY: (1) Water, the compressible component of tissue, cannot be compressed under prosthetic loads. (2) Internal resistance and external load are equal, and tissue becomes in effect an immovable solid. (3) Abnormal position of tissue when pressure is applied. (4) Unseating of denture when pressure is released and tissue returns to normal.

RETENTION: (5A) Surface tension is the retentive factor. A thin fluid film between two closely fitted surfaces. (5B) Surface tension as it applies to a denture. (6A) Saliva film thin, seal unbroken. (6B) Seal broken, excessive saliva causing thickening of the film. (7A) Maximum power when separation movement is at right angles to the surface of the moisture film. (7B) No power when movement is parallel to the surface of the film. (7C) The only value of the flanges is to prevent lateral movement.

MUSCLE FREEDOM: (8) In muscle trimming, the ridge tissue is pulled from normal position. (9) With no muscle trimming, there is no distortion and the ridge tissue remains normal.

COMFORT: (10) Pounding of bony prominences by denture base. (11) Bulging of soft tissue at periphery due to the tissue being forced out of normal position, causing severe cutting pain. (12) All surrounding soft tissue is immovably supported.

"peripheral seal" does not exist, and stability or retention cannot be impaired.

Comfort

Equally as important as any of the forementioned requisites, and to the patient perhaps more so, is comfort. With the many *techniques* which necessitate all kinds of manual effort to obtain an accurate impression, the result, as described, is soft tissue that moves laterally to the periosteum and bone. This produces a pounding of the bony prominences by the denture base, and consequent pain to the patient (10 in illustration). The impression technique likewise may result in the ridge tissue being forced out of normal position so that it bulges at the periphery, causing severe cutting pain (11 in illustration). With a mucostatic impression, all the surrounding soft tissue is immovably supported and these same bony prominences are protected (12 in illustration). Likewise, there is no distortion of tissue and no bulging at the periphery.

Conclusions

Inasmuch as the principles of a mucostatic impression, as outlined, are founded on scientific laws, it would seem that the problem of obtaining well fitting denture bases is finally answered. Unfortunately, however, in taking an impression in the oral cavity, the subject is a live human being with all the varying characteristics usually encountered in such a subject. Because it is essential for a mucostatic impression to have the tissues in a relaxed, natural state, it is not always possible to obtain such an impression with the materials at hand. But principles based on scientifically established facts must not be discarded. Surely the inventive genius existent in the dental profession will emerge with the proper materials to simplify the application of these principles to the large and varied number of cases awaiting the solution of mucostatics.

Practical Application

A practical application of the described principles in taking a lower mucostatic impression follows:

1. Take a good primary impression, not a snap impression. Use an oversized tray and a low-fusing modeling compound.

2. Fit a light, flexible, oversized metal tray to a model run up from the impression. This tray should include the retromolar pads, full ridge coverage, and enough flange length to include the finished base outline.

3. Place the patient's head in an upright position. Advise the patient as to the importance of complete relaxation and absolute immobility. Insert gauze napkins in the patient's mouth to keep the lower ridge dry.

4. Fill the prepared metal tray with a creamy mix of an impression material of the eugenol-zinc oxide variety.

5. Remove the gauze napkins with the left hand, and at the same time, in a rotary motion, with the right hand insert the tray containing the impression paste into the patient's mouth. Center and stabilize the tray without applying pressure. As soon as the material goes from the creamy state to the point where the material and tray will retain itself, remove the fingers by drawing them toward the center of the mouth opening. Do not in any way distort the muscles of the face.

6. Allow the impression material to harden. Remove the impression, examine it carefully for imperfections, and wash it. Reinsert the impression and test for stability and retention. If the impression complies satisfactorily with these tests, the impression is completed.

704 *Medical Arts Building.*

A Simplified Method of Obtaining Elastic Traction in Treating Jaw Fractures

(*Continued from page* 433)

the crown of the cap for ventilation.

7. This apparatus is comfortable for the patient, obviates the pressure headaches of a nonelastic bandage, and is easily removed or adjusted.

Uses

The felt hat suspension apparatus is most useful in:

1. Emergency treatment of fractures of the jaw.

2. For temporary reduction and immobilization of fragments.

3. As an adjunct to intra-oral treatment.

4. To prevent the opening of the jaws after splints or wires have been applied.

5. When there is little or no displacement of the fragments.

6. As a means of applying traction upon a displaced maxilla after proper occlusion has been established.

7. To supply the additional support necessary in the first week of treatment of fractures.

8. To give the patient a feeling of security and stability in the injured parts.

6740 *Torresdale Avenue.*

The Editor's Page

AN OUTSTANDING clinician, Bernard I. Comroe, M.D., of the University of Pennsylvania, gives this sound opinion and good advice to his medical colleagues:[1]

"Unfortunately, most medical men have but little knowledge concerning the teeth and their disorders; however, they do not hesitate to tell the dentist which teeth must be extracted. It is hoped in the future that the dentist will be considered as a consultant and not merely as a mechanic. Frequently the physician will order extraction of all pulpless teeth in an arthritic patient despite the fact that there is no more evidence to warrant their extraction from a patient with rheumatoid arthritis than from a patient without arthritis. On the other hand, a negative roentgenogram of a pulpless tooth does not eliminate the tooth as a possible source of infection."

Although the old practice wherein the physician dictated to the dentist and did not consult with him is passing, some residual attitudes of order giving among physicians still need correction. In the military establishment the condition is worse than in civilian practice. For instance, there are cases on record in the Naval Medical Department where orders had been issued that teeth could not be extracted by the dental officer except after medical approval, and that dentists under no conditions could use or prescribe drugs. Fortunately, these shortsighted orders were rescinded. But they are examples of what happens when dental service is under medical domination.

In civilian life there is a more wholesome attitude of cooperation between dentists and physicians, probably because neither one, by law or regulation, is dependent on the other. In communities where the physicians give orders rather than ask for advice, some of the fault may be with the dentist himself: He has not thought in terms of the organic well being; he has not spoken from the same biologic point of view as the physician. The criticism that some dentists are of a mechanical mind exclusively is just. There is nothing degrading about mechanics. Surgery, for example, in all its branches, is mechanics of a high degree. The surgeon, however, carries an appreciation and an understanding of tissue and its responses. His mechanical procedures, if he is a great surgeon, are based on a fine understanding of biologic principles. No one would want a dentist to be an indifferent or poor mechanic. We are proud of our technical skills.

The dentist can serve better, though, if he performs his mechanical skills with a better understanding of the organic entity of the patient, with what Draper calls the "organismal unity of the patient." We are making good progress in that direction. Our dental schools are offering better courses in biologic fundamentals. Internships, fellowships, and residencies, are being created in our best hospitals for dental graduates. These experiences will give the dentist an opportunity to observe and to work in the fuller atmosphere of medicine rather than in the restrictions of the dental clinic. As Doctor Comroe suggests, dentists and physicians should enjoy an equal status as consultants. In practice, the flow of patients is back and forth between the two; neither should be subservient to the other.

As a courtesy and for the sake of accurate record keeping, both the dentist and the physician should acquire the good habit of sending the referring practitioner a written case report. There is a woeful lack of this practice. We have all had the experience of referring patients to physicians and to dental specialists, never knowing whether or not they arrived and, if they did, what treatment was instituted. Likely we must all confess to the same negligence of receiving a referred patient from a physician without the courtesy of an acknowledgment and a report. In the case of the patients referred between dentists and physicians, the matter of acknowledgment is more than courtesy: It should be as necessary as the case history.

[1] Comroe, B. I., Common Mistakes in Handling of Patients with Arthritis and Allied Conditions, J.A.M.A., 127:392-396 (February 17) 1945.

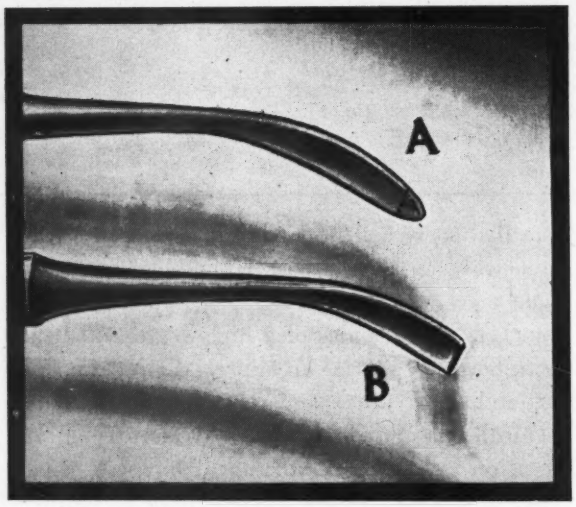


Fig. 1

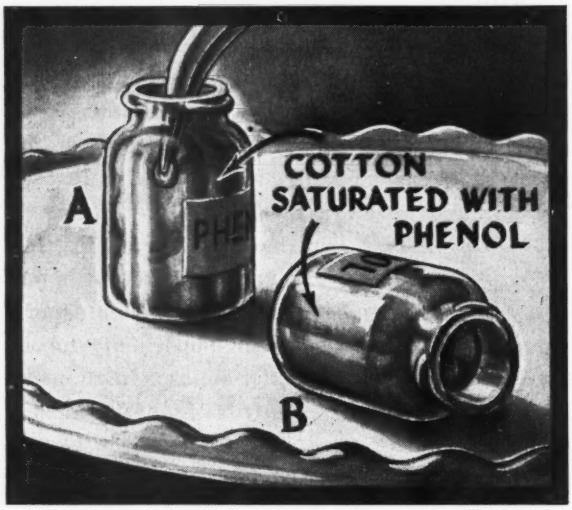


Fig. 2

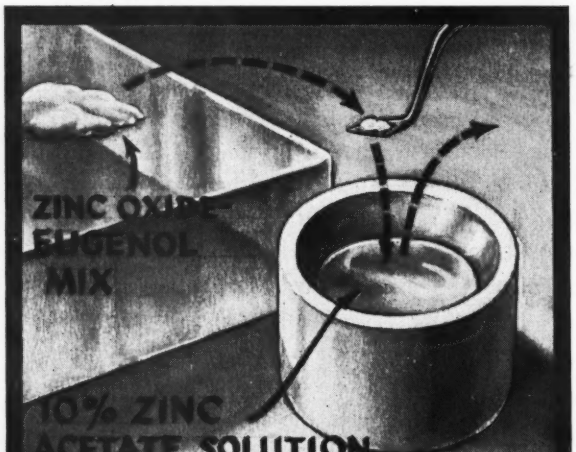


Fig. 3

Clinical and Laborato

An Amalgam Condenser

Clarence H. Blanchard, D.D.S., Los Angeles

Fig. 1—A beaver tail burnisher (A) with the end ground off square (B) makes an excellent amalgam condenser for parts of cavities that are narrow and hard to get at, such as gingival floors of class II cavities and narrow occlusal grooves.

Preventing Spilling of Liquid Phenol

Major Ford W. Stevens (DC) AUS, Fort George G. Meade, Maryland

Fig. 2—Place cotton saturated with phenol into a glass medicament bottle (A). A small pledget of cotton, carried in cotton pliers, can be saturated easily by simply pressing the pledget into the saturated cotton in the bottle. Even if the bottle should be tipped over (B) the liquid phenol will not spill out.

Quick Setting Zinc Oxide-Eugenol Paste

Lieutenant (jg) Samuel L. Gilberg (DC) USNR, Geneva, New York*

Fig. 3—Zinc oxide-eugenol mix can be made to set within a few minutes after packing without discoloring the tooth or affecting the setting time of the unused mix. Dip the paste, which is carried on the instrument, into a 10 per cent solution of zinc acetate, and pack it into the cavity. Dip the packing end of the instrument in the zinc acetate solution to prevent the zinc oxide-eugenol paste from adhering to it. The final setting time depends on the original "dryness" of the mix, of course, but it should not exceed five minutes with a proper mix.

*The opinions or assertions contained herein are the private ones of the writer and are not to be construed as official or reflecting the views of the Navy Department or the Naval Service at large.

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...GGESTIONS . . . .

Keeping the Handpiece Clean of Grit and Pumice

W. J. Worsley, D.D.S., Dixon, Illinois

Fig. 4—Remove the rubber stopper from the end of an anesthetic tube and punch a hole through the center of the stopper with a rubber dam punch. Slip the stopper over the shank of the polishing brush. This will prevent the grit and pumice from getting into the handpiece when the teeth are being cleaned and polished after scaling.

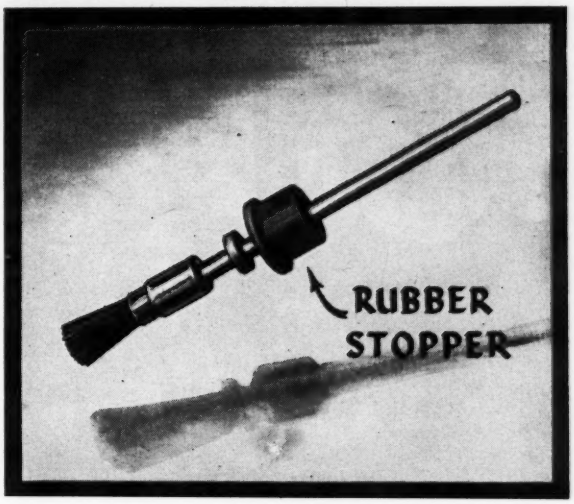

Fig. 4

Adding to the Base of an Amalgam Model

R. J. Sanregret, D.D.S., Negaunee, Michigan

Fig. 5—In making amalgam models for indirect procedures, if the amount of amalgam mix is not quite sufficient, cut lead foil (that from x-ray film does well) into small pieces and pack it in on top of the amalgam. The foil will absorb the excess mercury and become hard. This method will make unnecessary another mix if only a small amount of amalgam is needed to make a good base for the model.

Fig. 5

A Handy Amalgam Carrier

J. Campbell Thompson, D.M.D., Boston

Fig. 6—A small porcelain jar, one that can be placed conveniently on the instrument bracket, is filled with Kerr's utility wax. Before the amalgam is picked up and inserted in the cavity, the plugger is touched in the wax (A). The bit of wax thus picked up on the plugger makes it possible to hold the amalgam until it can be condensed in the cavity (B).

(*Continued on page* 448)

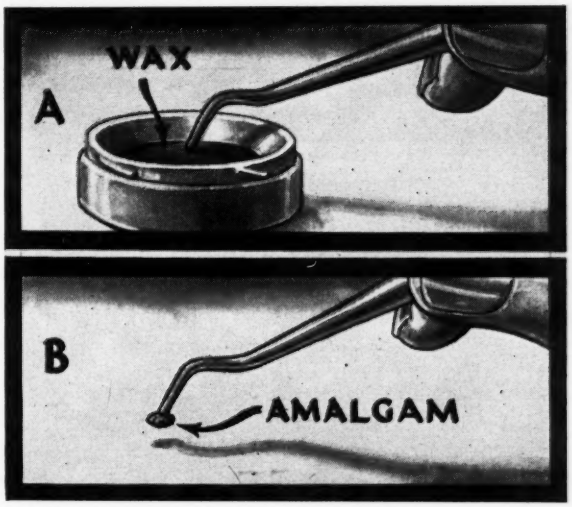

Fig. 6

of the technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time.

Send your ideas to: Clinical and Laboratory Suggestions Editor, THE DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

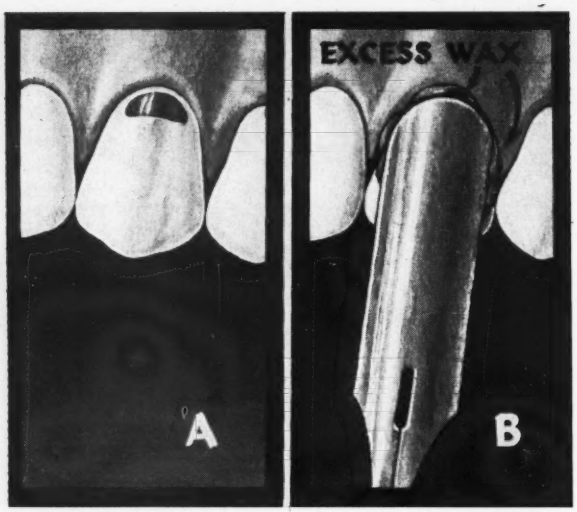

Fig. 7

An Aid in Cementing Gingival Inlays

Marcus E. Waltz, D.M.D., Portland, Oregon

Fig. 7—After the gingival inlay is finished roughly, an impression of the labial (or buccal) surface of the tooth is taken with the inlay in position (A). The rounded top of an ordinary pen point is used as a matrix to hold the wax for the impression. When it is time to insert the inlay, the cavity is filled with cement, and the inlay is placed in proper position and is held there by the metal pen-point matrix.

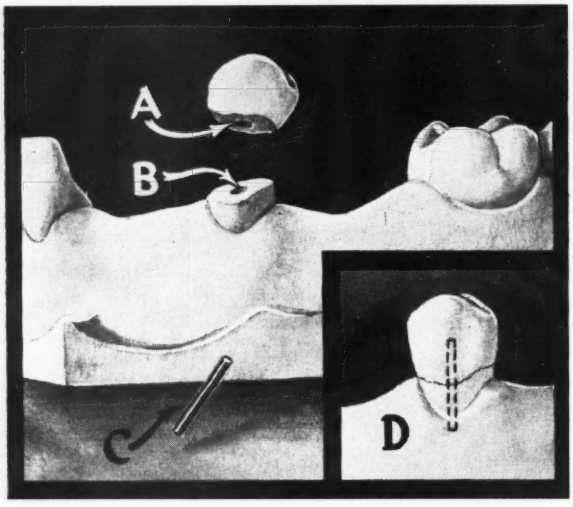

Fig. 8

Repairing a Tooth Broken Off a Stone Model

G. Guy Overholt, D.D.S., Altavista, Virginia

Fig. 8—An annoying experience in laboratory procedure is to have a tooth break off a stone model. To replace such a tooth, drill a hole in the broken part of the tooth (A) and another hole of the same size on the model at the place of breakage (B). Adjust a small piece of wire (C) to fit in these holes, and cement it in position (D). Use a thin mix of cement in placing the tooth in position with the wire pin.

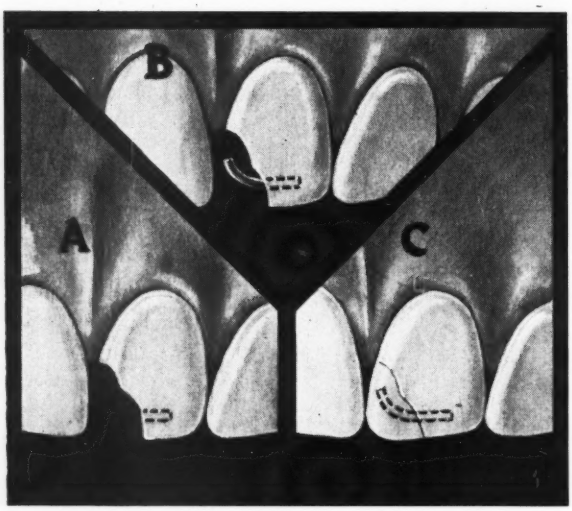

Fig. 9

Improving the Retention of Incisal Angle Silicate Restorations

Lieutenant A. R. Anderson (DC) USNR, Elizabeth City, North Carolina*

Fig. 9—A small round bur is used to make a hole in the incisal third of a tooth (A), and a small piece of wire is contoured and adjusted to this prepared hole (B). This wire, which extends into the cavity and into the silicate (C) gives added retention to the restoration.

GGESTIONS (Continued from page 447)

Applying Silver Nitrate to Cavities and Sensitive Areas

Commander James J. Dempsey (DC) USN, *U. S. S. Lexington*, San Francisco*

Fig. 10—In applying silver nitrate to cavities and sensitive areas with cotton pledgets, there is a tendency to touch surfaces other than the cavity walls. Double-end ball burnishers of two sizes, for small and large cavities, give much neater results. Dip one end of the ball burnisher in the silver nitrate and apply it to the cavity. Then apply the reducing agent with the other end of the burnisher.

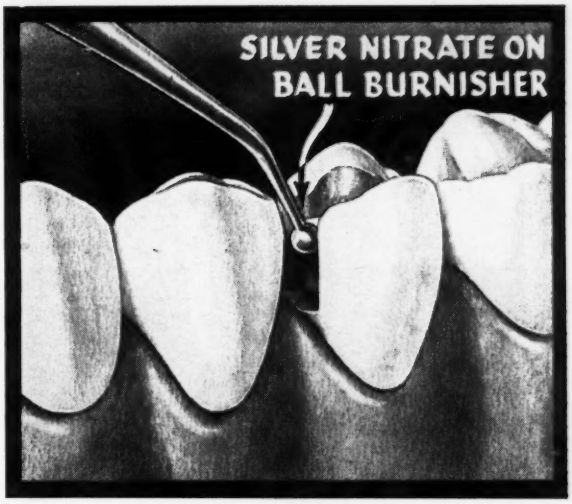

Fig. 10

Preventing Shifting of Clasps when the Flask is Being Closed

J. C. Shotton, D.D.S., Cleveland

Fig. 11—Place a small piece of cured acrylic under the tailpiece of the clasp or extension bar before placing it in the flask. This piece of hard acrylic will prevent the clasp or bar from moving when the flask is being closed. The piece of cured acrylic that is placed under the tailpiece becomes a part of the new acrylic after processing.

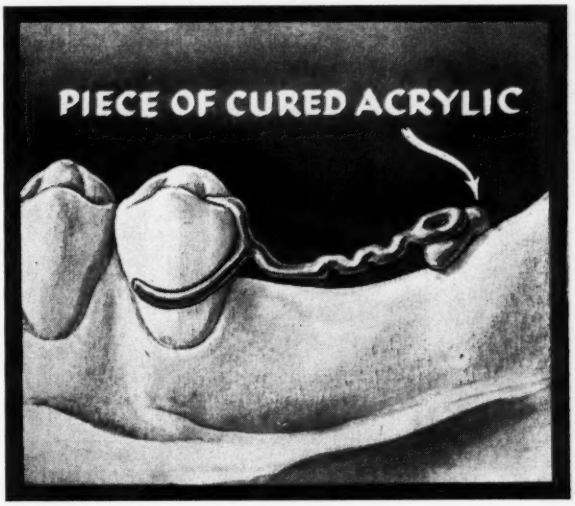

Fig. 11

Preventing Injury of the Periodontal Membrane in the Indirect Impression Method

Lee Alan Kapilow, D.D.S., New York

Fig. 12—A properly fitted copper tube is festooned and carried to place on the prepared tooth to a point just below the margin of the gingiva. A point on the tube is then marked which corresponds with the incisal or occlusal level of the adjacent tooth. The band is then removed, two cuts about 2½ millimeters apart are made from the untrimmed end to the level of the mark, and the piece of copper between them is bent out at right angles to the long axis of the tube. This little flap, or stop, will, when the impression is taken, engage the incisal or occlusal surface of the adjacent tooth and will prevent the tube from being forced too far below the gingiva and injuring the periodontal membrane.

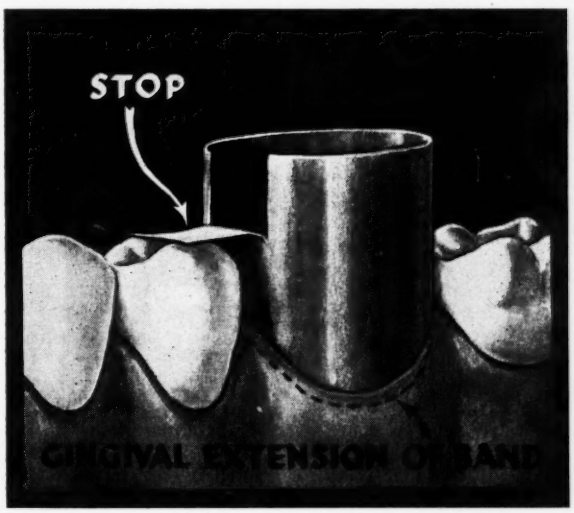

***Fig.* 12**

Contra-Angles

The Irony of Science . . .

In the excellent publication on fluorine by the New York Institute of Clinical Oral Pathology, the pioneer investigator on mottled enamel, F. S. McKay, describes the citizens of Oakley, Idaho, who changed their communal water supply from hot springs to cold springs to prevent further dental fluorosis in their children. After the change in the water supply, the children had no mottling of the enamel but they did have an increased incidence of caries. The irony is clear: By changing the water supply, one disease was prevented and another increased.

I remember the late Jimmy Walker of Chetopa, Kansas, who with the fervor of a zealot preached to the people of his community the need for changing the water supply. The water of Chetopa was high in fluorine, and the children had mottling of the teeth. In time Jimmy's campaign was successful and the people voted a bond issue to develop a new water supply. Neither the citizens nor Jimmy Walker, the dentist, knew that with the new fluorine-free water the children of the community would be plagued with more tooth decay.

When one projects treatments over a long period and attempts to visualize ultimate outcomes, he is likely to develop some uncertainties and misgivings. What, for example, happens over the long pull to people who ingest large doses of calcium and phosphorus and fill themselves to the brim on vitamin preparations? Is it possible that they may be encouraging early calcifications within the blood vessel walls that may lead to arteriosclerosis, hypertension, and an early death? In our dental procedures may not some of our treatments that look so successful at the

moment have within them the potentials of harmfulness? For instance, sometimes the malocclusion is corrected, but the caries rate is increased by orthodontic treatment. Alveolectomy is a spectacular surgical procedure, but in time there may not be sufficient tissue to assure a satisfactory denture base. Radical excision of periodontal tissue may eliminate pockets but produce an unsightly snaggle-tooth, fanglike dentition.

The test of the value of anything is the test of time. How long is function maintained? What is a cure, a relief in symptoms for a short time or the transference of complaints to another organ system? When can we speak of something as cured? We can't "cure" caries. We can't "cure" periodontal disease where bone destruction has occurred. By projecting too far into the future we may see treatments only dimly and futilely. We can't, and patients won't, wait too long for our philosophic questionings to be announced in words of certainty. We can, however, make a test in our minds to determine if the technique or treatment that proves so promising now seems to have within it the potentials of future harm. The greatest good in the end and in the long run is what we are searching for.

The Dental Charter . . .

With the present tendency of medical education to take over dental training (Columbia and Harvard, for example), it is heartening to hear an important dental society speak clearly and firmly for autonomy in dental education. The New York Academy of Dentistry has announced a set of principles that could well enough be called "The Dental Charter." Here are the eight articles in that "Declaration of Independence":

1. Dentistry is a specialty of medical science, but is not a department of medical practice.

2. The independence of dentistry as a health service profession should be preserved and strengthened.

3. Dental schools, which are departments of universities, should be

(*Continued on page* 457)

(*Continued from page* 452)

permitted administrative autonomy under the guidance of a full-time dean possessing a dental degree.

4. All candidates for admission to dental schools should be required to present the same educational qualifications as candidates for leading medical schools.

5. The first two years of the dental curriculum should be identical with the corresponding medical curriculum.

6. Surgery in the oral cavity, like other dental operations, is a specialty of dentistry.

7. The possession of a medical degree, although a valuable attainment, is not essential for a general practitioner of dentistry.

8. The field embraced by medical science is so broad, and the specialties of medical practice are so many and so varied, that dentistry will develop and mature more satisfactorily and more thoroughly if, while permitted close and free cooperation with medicine, it is allowed complete autonomy and freedom of action.

Ask Me and I Will Tell . . .

John Hunter is a name in medical science that we all revere. Hunter was a big man, and, if we did not know it from his contributions to medical science, we would know it from his quotation: "Never ask me what I have said or written, but ask me what my present opinions are and I will tell you. I hope I grow wiser every year."

Once in a while we hear some dentist lambasting one of his colleagues because once in the dim past the colleague said something or wrote something that he no longer believes. The ability to change one's mind is a sign of independence. Pig-headedness and obstinacy are not a sign of mental greatness.

Life is Like That . . .

In *Life*, the issue of June 11, there is a pictorial story of teen-age boys. It describes their rough play, their ravenous food habits, their gangling sprawls, and their acne faces. One full page shows a fine looking young lad reading in bed. He has a cola

drink at his mouth and a box of crackers beside him. We presume that as soon as the boy finished his cola drink, he switched out the bed-lamp and went to sleep with cracker debris and the remainders of the cola drink still in his mouth.

We are not worrying about the boy sleeping in bed with the cracker crumbs. He looks strong enough and non-neurotic enough to stand that. But we are concerned when a magazine of such wide circulation, and such pretensions of importance, shows a boy violating some important nutritional rules. It has been proved definitely that the cola drinks have a pronounced acid reaction and that they are likely to increase the incidence of dental caries.[1] We also know that cracker debris can be a suitable pabulum to produce the growth of acid bacteria in the mouth. These two food violations, plus the nonbrushing of the teeth, are not things to encourage in our teen-age youngsters who, even in the best conditions, show high susceptibility to dental caries.

It is too bad that *Life* magazine does not have somebody on its staff who can be a little more critical of subjects of health importance.

"Freedom is More Than a Word" . . .

Mr. Marshall Field (followed by Roman numeral three, please) is the grandson and heir of the merchant. Mr. Field has taken his millions and stepped into the newspaper field where he has sponsored the New York *PM* and the *Chicago Sun*. Mr. Field is also the author of a recent book, FREEDOM IS MORE THAN A WORD. Like any other author, Mr. Field has recently been out doing a little plugging for his book. Even with multimillions, the satisfaction of having a good book sale is appealing.

Mr. Field, wearing a $200 suit and emitting a British accent, appeared before the summer session of Northwestern University, there to express his liberalism. It is hard for me to

[1] Restarski, J. S., Gortner, R. A., and McCay, C. M.: Effect of Acid Beverages Containing Fluorides Upon the Teeth of Rats and Puppies, J.A.D.A., 32:668 (June 1) 1945.

reconcile his sleek manner, his Oxford accent, and his sartorial splendor, in the caste of liberalism. But I am one who will admit that he is sincere. With his wealth he could easily enough sit behind the baronial walls and never stir out into the rough-and-tumble world.

Mr. Field has a rather wholesome and original concept of freedom. He is strong for the Bill of Rights and its guarantee for freedom of speech, freedom of press, freedom of assembly, and freedom of worship. He believes that our constitution gives us the structural guarantees of freedom, but frequently our functions of freedom haven't kept pace with the structure. That is to say, although there are strong constitutional guarantees, there are none-the-less tyrants, conspirators, bigots, and reformers loose among us. We even have some of them in dentistry.

Mr. Field believes that we should have a healthy skepticism to all our traditional ways of doing things. He believes that we should have access to facts, and that we should fear the dogmatism of the "right" as well as that of the "left." He talks a good deal about "toughness of spirit,"

which is the privilege, in fact the responsibility, to disagree and question. Maybe it is Mr. Field's early British associations that make him skeptical of the pseudogentleman, of people who suavely agree on the surface of things but are malcontents beneath. I have the feeling that this grandson of the merchant has a skepticism of all people who tell us what is good for us. Those people are the reformers, the ones who try to fit everybody to their pattern of thoughts and actions. We can decide what is good for us only after open debate and collective decision making. Mr. Field would warn us to take the word of no one person or small group of people who set themselves up to tell us what is good for us.

I have often seen the analogy between the tyrants in general society and the minor tyrants we see in professional organization. The same pattern of thinking activates them both. Wherever tyrants are, in the community of the world or in the community of dentistry, they should be destroyed.—E. J. R.

Acute Pericoronitis

Lieutenant J. N. ANDREWS (DC) USNR

ACUTE pericoronitis is frequent among Naval personnel because the majority are at the age when the third molar is erupting. The third molar, however, should not be extracted in the presence of a pericoronal infection.

The following treatment will help in reducing the acute symptoms sufficiently to permit extraction:

1. Frequent hot saline lavage is given until the acute symptoms resolve or fluctuation appears.

2. When the third molar has become extruded and bites directly into the lower third molar flap, grinding the upper molar cusps, or extraction of the upper tooth, frequently relieves the acute symptoms around the lower third molar.

3. The patient should abstain from smoking.

4. Daily cleaning of debris from

under the flap should be carried out. Local application of any of the medicaments used in the treatment of Vincent's stomatitis is helpful.

When the tissues after treatment do not present the normal tone and appearance satisfactory for extraction, a paste made of sulfathiazole or sulfanilamide and azochloramid in triacetin (1:500) is placed into the socket and covered with a sterile sponge. The patient is instructed to keep the sponge in place as long as possible, preferably for an hour. The postoperative results with this type of treatment have been excellent.

—From *United States Naval Medical Bulletin*, 45:169 (July) 1945.

Low Calcium Diet: Dental Effects

C. A. H. SMITH, D.M.D., and R. F. LIGHT, B.S., M.S., New York

MANY DISCUSSIONS of the effect of various diets upon the teeth have emphasized the necessity for adequate amounts of calcium, phosphorus, and vitamin D. It has been assumed that the withdrawal of any of these materials would seriously affect the teeth. This does not seem to be the case, however, for the withdrawal of calcium from the diet has never been shown to affect the tooth structure to any serious extent. Mellanby concluded that "for the production of perfect teeth the diet must contain some calcium and phosphorus. If the diet is rich in vitamin D, the amount necessary to produce such teeth may be very small." Schour stated, "A correlation between calcium metabolism and caries has not been established." Lund and Anderson, using white rats on a diet deficient in vitamin D and calcium, were unable to produce structural changes in the teeth of experimental animals, although the alveolar bone softened and the teeth loosened.

Procedure

1. Three dogs of terrier type, born the same day, were used in the study. The puppies were completely weaned

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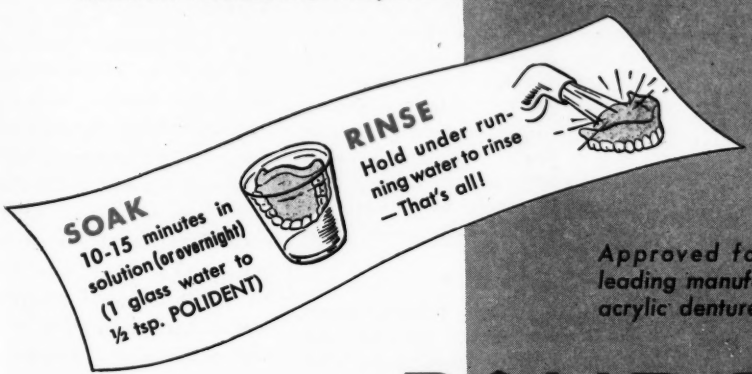

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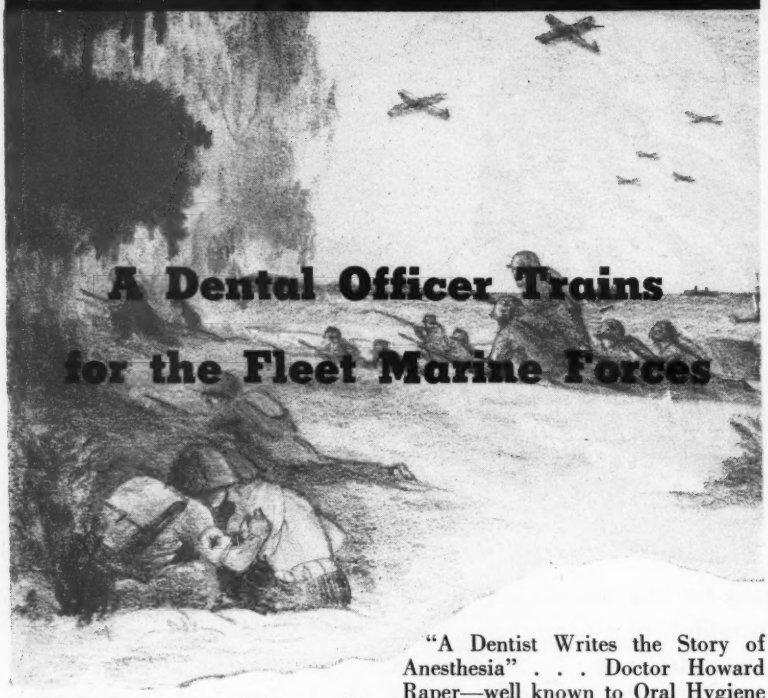


Tired after a busy day? . . . Sit back in your armchair and read about the "busy days" of the dentists training for duty with the Fleet Marine Forces! Follow them into fox holes, through gas attacks, up and down cargo nets, and onto the beaches . . . Your chair will feel a little more comfortable in contrast to their "conditioning routine," and your midnight snack will taste a little better after reading about their limited water supply and K rations. The article, by Lieutenant David Thompson (DC) USNR, is on page 1362 of the August issue of Oral Hygiene.

★ ★ ★

Interested in politics? . . . One dentist, whose interest in tariff and taxation started him on a political career, is now secretary of state and lieutenant governor of Utah. His story, written by Mabel Harmer (page 1365), makes fascinating reading.

★ ★ ★

Here's that medical-dental discussion again. Seems that Doctor Draper's article "The Dentist Drills the Doctor—and Explains Why" (December, 1944, Oral Hygiene) started a lot of thinking. Doctor J. H. Mand expresses his opinion of what the physician should know about dentistry . . . sums it up in 10 terse points, in an article on page 1367.

"A Dentist Writes the Story of Anesthesia" . . . Doctor Howard Raper—well known to Oral Hygiene readers for his skillful writing—has turned his talent to broader fields, and produced a book, "Men Against Pain." Because the story is rich in human interest, it will appeal to the layman as well as to the dentist. Oral Hygiene is proud to present a preview of Doctor Raper's book . . . on page 1370.

★ ★ ★

"From Pain to Habit" . . . This article was written by a dental patient—not the average patient, but a man whose business is to help other businessmen improve their relations with the public. In analyzing the faults and virtues of individual dentists and of the dental profession, David R. Craig gives excellent advice on how to improve relations between the dentist and the patient—and how to educate the public to the need for regular dental care. His article is on page 1381.

★ ★ ★

There are other articles, many short items of special interest, and the ever-popular departments (So You Know Something About Dentistry, Technique of the Month, Military News, Dentists in the News, Editorial Comment, Ask Oral Hygiene, and Laffodontia)—all giving maximum information in minimum reading time.

at 1 month, when dogs 106 and 109 were placed on a purified calcium-deficient diet consisting of 19 per cent purified casein, 66 per cent sucrose, 8 per cent vegetable oil, 3 per cent cod liver oil, and 4 per cent of a calcium and phosphorus free salt mixture. They were given daily supplements of purified vitamins of the B complex, plus a yeast extract. This diet contained 0.027 per cent calcium and 0.153 per cent phosphorus.

2. Dog 110 was fed a similar diet except that it contained 45 per cent crude casein with a corresponding reduction in the sucrose content. This diet had 0.196 per cent calcium (derived from the casein) and 0.427 per cent phosphorus.

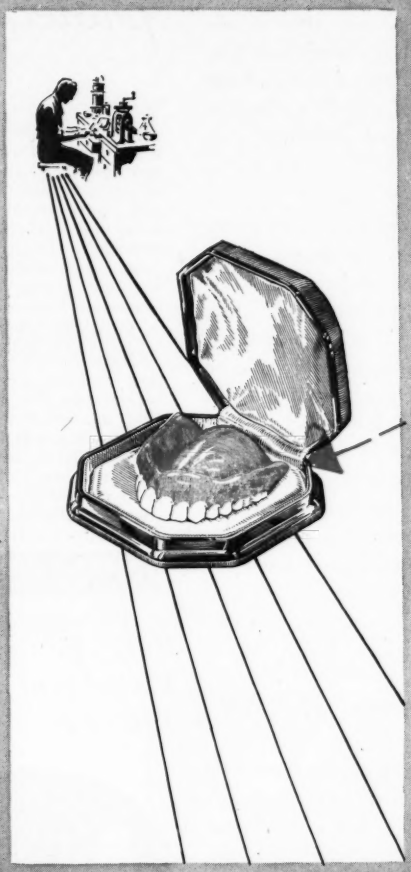
3. The animals received 100 gamma B_1, 100 gamma riboflavin, 100 gamma B_6, 1 milligram calcium panthothenate, 2 milligrams choline, 2 milligrams niacin, 20 milligrams inositol, 10 gamma biotin per kilo of body weight, and 1 gram yeast extract daily.

4. After five weeks, dog 106 received supplemental calcium as $CaCO_3$, 120 milligrams daily, which raised the calcium content of the diet, making it 0.10 to 0.15 per cent of calcium, depending on the intake of food.

5. After 11 weeks of these diets, the dogs received normal mineral supplements, calcium and phosphorus, for 14 weeks.

Results

1. The animals grew reasonably well until the effects of the calcium deficiency became evident. It produced a marked effect on skeletal development of the forelegs of dog 109. Although the end of the shaft of the ulna was somewhat enlarged, the uncalcified cartilaginous zone was narrow. The shaft was bowed outward with the bend occurring in the central part, indicative of an acute calcium deficiency. Further, dog 109 suffered a spontaneous fracture of the femur and a greenstick fracture of the left radius shortly after being changed to the normal diet. The fractures healed normally, although the animal was permanently deformed by the bent forelegs.



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2. Gross examination of the jaws showed a slight hypoplasia of the enamel in each animal. The roughening did not in any place expose the dentine. The teeth were fixed tightly in their alveoli and the roentgenograms showed normal alveolar structure.

3. Ground sections showed the hypoplasia of the enamel and dentine but, together with decalcified and stained sections, showed no further modification of tooth structure.

Conclusions

An acute calcium deficiency in the diet of young dogs may produce drastic effects on the skeletal structure, yet have little effect on the structure of the teeth and alveolar process. A deficiency of calcium that produced spontaneous fractures, bending of the long bones, and failure of growth during the period in which the permanent teeth were formed, did not result in severe hypoplasia of the enamel nor in other structural modifications.

—From *Journal of Dental Research*, 24:53 (February) 1945.

New Guinea Mouth

A recent report from the Southwest Pacific referred to an oral condition, which was seen on a few occasions, as "New Guinea mouth." The outstanding characteristic of these cases was sloughing of the interdental papillae, which exposed the bone between the teeth for areas varying from 1.5 to 3 centimeters in size. They exhibit considerable pain.

Smears from these areas present the typical picture of virulent Vincent's stomatitis. The spirochetes have three or four loops, and there are few fusiform bacilli.

Surgical cement was used to cover denuded bone of the alveolar crests, and this treatment was retained for five or six days. Other routine treatments for Vincent's stomatitis were established.

—From *The Bulletin of the U. S. Army Medical Department*, 4:30 (July) 1945.